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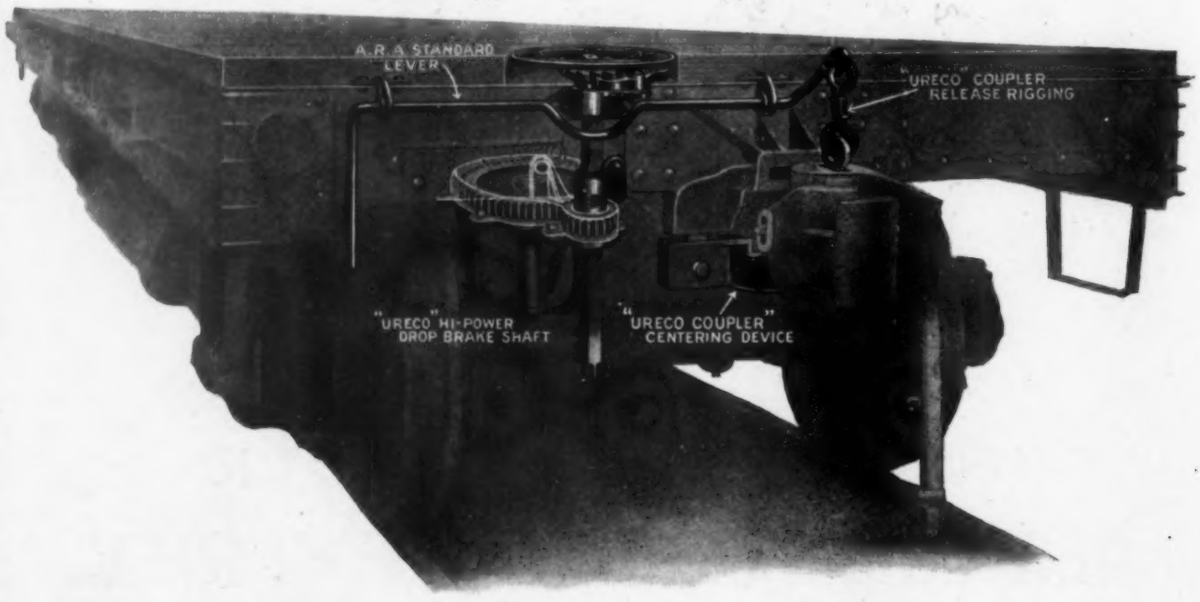

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Volume 76 **Number 4**

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EDITORIAL

Railway Age

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Railway Taxes Make a New Record

While the railways themselves have been making new records of various kinds, the tax gatherers also have been making a new railway record. The statistics of the Interstate Commerce Commission for November, 1923, which only recently have become available, disclose that in that month the tax accruals of the Class I railways amounted to $30,386,092, or to $1,012,870 a day. This was the first month in history when their tax accruals exceeded a million dollars a day. The steadiness and persistency of the increase in railway taxes, regardless of all changes in the volume of business, in earnings and in operating expenses, is illustrated by the following statistics giving the tax accruals in November of each of the last six years: 1918, $15,910,000; 1919, $18,820,000; 1920, $22,343,000; 1921, $25,042,000; 1922, $27,284,000; 1923, $30,386,000. Since 1919 the taxes paid by the railways have regularly exceeded the cash dividends paid by them. In 1922 the taxes of the Class I roads exceeded their dividends by about $34,000,000. The total taxes of these roads for 1923 are estimated at over $330,000,000, and if they continue to increase in 1924 as they did in 1923 they will amount, this year, to approximately $365,000,000. This would exceed the dividends paid by them in any year since 1914 and would be equivalent to a dividend of 5 per cent on all their outstanding stock. Why do not any of those who are urging a restoration of pre-war railway rates also advocate a restoration of pre-war railway taxes? The taxes of the railways are now about 170 per cent greater than they were 10 years ago.

Terminals Limit Locomotive Utilization

The real purpose of engine terminals is to keep locomotives operating, and the extent to which they perform or rather fail to perform this function is in a measure indicated by the fact that locomotives are in actual road service on the average only eight out of every 24 hours. Moreover, this figure of eight hours' service a day does not take into account the time spent in back shops and roundhouses while awaiting or undergoing repairs. By far the great majority of the present engine terminals were built when locomotives were much lighter and less complicated than they are today and when freight car loadings fell far short of one million cars a week. Naturally, in view of the difficulty which railroads have encountered in financing improvements in fixed property, engine terminals have not been enlarged and provided with equipment to meet modern needs and there is a serious lack of time and labor-saving facilities, absolutely vital to efficient operation under present conditions. Terminal facilities should be improved and in some cases terminals relocated to reduce in every way possible the time required for turning locomotives as well as the frequency of turning. The following significant quotation from a paper by L. K. Sillcox, general superintendent of motive power of the Chicago, Milwaukee & St. Paul, has appeared in these pages before and will bear repetition: "The average cost of turning power is now approximately $6 to $8 per engine turned and the average number of turns is 1.4 per serviceable locomotive day. A revision of facilities that, by reducing the time element of turning, would produce a reduction of 50 cents per engine turned and reduce the frequency of turning 0.1 turning per day (say from 1.4 to 1.3), will accomplish an annual economy on a complement of 2,000 locomotives to the extent of approximately $650,000, an amount which would pay interest at 5 per cent on $13,000,000. Such an appropriation, properly distributed over the system, would provide for a great many time-saving features which if utilized advantageously would produce large returns on the investment and at the same time recover many serviceable locomotive hours to revenue service."

The Cost of Hot Boxes

How much do hot boxes cost? A freight conductor who has written to us recently tells of having to deal with more than one hundred of them on trains which he handled within a period of thirty days; he says, moreover, that his experience was not exceptional and that other crews on the division have met with the same problem. This averages more than three hot boxes a day and, if the experience is typical in the territory, must surely mean the loss of at least one hour directly chargeable to hot boxes by every train moving over the locomotive district where our correspondent is employed. Thus the fuel losses and additional wage payments to train crews alone must come to a surprising total, to say nothing of resulting damage to equipment, the expense of sending carmen out on the road to make repairs and the delay to shipments in cars which have to be set out. Furthermore, our correspondent informs us, all of these hot boxes without a single exception were due to insufficient packing which had been permitted to run dry. The proper place to deal with hot boxes is the terminal and not out on the line; the proper time to deal with them is before they occur. The cost to the railroad of a much smaller number of hot boxes than our correspondent reports would go a long way toward paying the wages of an additional inspector or oiler at the terminal whose services would prevent most of them.

Take Advantage of the Developments

One of the oft mentioned advantages of the private ownership of railroads is the incentive it affords for the exercise of individual initiative in the introduction and development of improved methods for the conduct of the multifarious activities incident to their operation. The opportunities thus afforded lie not alone in the freedom from the deadening influence of governmental bureaucracy but also in their organization as independent companies, each of which is at liberty to carry on development work independently of the others. In this connection, the various associations of railway officers, together with the technical press, play an important part in providing suitable channels for a free flow of ideas among all those concerned with the same basic problem whereby new and improved methods developed by one may become available to others. But are the railroads availing themselves of these facilities to the fullest extent? A serious consideration of the facts should

convince anyone that this is not the case. There is a wide disparity in the application of modern methods to railway operation. Whereas one group of roads will be found to make extensive use of a certain labor saving device or method others will be found adhering to old processes. This is not an indictment of individual roads but applies in a measure to nearly all of them, since roads which have been most progressive as to one phase of their operations may be among the last to discard antiquated methods along other lines. For example, a railroad which is making intensive use and securing excellent results with power ditchers may be making but limited use of motor cars, or, having motor cars in large numbers, may be manifesting decided inefficiency in their operation and maintenance. Perhaps the explanation for this condition may be found in inadequacy of supervision, as a result of which those activities receive the greatest attention which have attracted the particular interest of the department head. But whatever the cause the situation is one which must be overcome if the railroads are to make the most of their opportunities.

Keeping the Track Forces Intact

Aside from the rate of pay, no factor has greater influence on the attractiveness of employment to the steady, reliable workman than the degree of its continuity. The failure of the railroads to provide steady work the year around for a large part of their track forces has been one of the serious obstacles to the recruiting and development of high grade section foremen, for while the foreman is himself assured reasonably continuous employment, his gang is not, and it is difficult to interest ambitious, energetic young men of the type who would make capable foremen in a job that does not provide steady work. The objections to the maintenance of section forces to full strength throughout the entire year are too well understood to require enumeration here. Efforts have been made by a number of roads to provide a program for the conduct of track maintenance work which would conserve for the winter months those operations which could be carried on most readily during cold weather. But, although favorable reports have been given out from time to time concerning such efforts, they have met with little favor on a majority of the roads in the northern states, and from facts now at hand it would appear that this plan offers little promise in the solution of this problem. However, in view of the seriousness of the situation with which the railroads are confronted with respect to the track foremen, it is clear that further efforts must be made to develop a practical solution. The suggestion is made that excessive seasonal reductions in force could be avoided by measures designed to keep the section forces as small as possible throughout the active season, such as the conducting of all the major operations with extra gangs or extending the season of active work over the longest period possible. Too many roads are given to the practice of withholding the opening of their active season until late in the spring and of closing it early in the fall. Another suggestion is to retain a larger proportion of the men in the winter organization by a marked reduction in the number of hours worked per month, to be effected either by a greater shortening of the working day or by a systematic plan of layoffs on certain days of the week or month. By leaving this matter more or less to the discretion of the supervisory forces, the work could be greatly curtailed on days of extremely low temperature when the men are least efficient. This plan is of advantage not only in keeping a larger proportion of men attached to the organization so that they will be available upon the opening of the active season, but also in providing the track officer with a larger force to draw upon for emergency service.

"Propaganda" About Wages and Rates

RAILWAY EMPLOYEES are entitled to reasonable wages. The standards of the reasonableness of their wages are the cost of living, the wages paid for similar work in other industries, the hazards of the employment and other factors mentioned in the Transportation Act. "Weak" and "strong" roads pay the same wages. Whether a railway for which employees work is making a large or small profit has been almost barred from consideration as a factor in the determination of what wages the employees must be paid.

On the other hand, the wages a group of railways pay are not a measure of the reasonableness of their net return. The true measures of the reasonableness of their net return are, first, whether it is confiscatory, and, secondly, whether it is sufficient to enable the railways to attract adequate capital into their business.

These facts show there is no necessary conflict between reasonable wages for employees and a reasonable net return for the railway companies. Nevertheless, the railway labor unions and the railways and their spokesmen are constantly disseminating information—or misinformation—which is characterized as "propaganda." The spokesmen of the unions say what the railways disseminate about wages is "propaganda." The spokesmen of the railways say what the unions disseminate about the net return of the railways is "propaganda."

The "Railroad Trainman," which is published by the Brotherhood of Railroad Trainmen, in an article in a recent issue criticises the spokesmen of both the labor unions and the railways. It says:

> "The railroad employees, we think, are making the mistake of demanding reduction in freight and passenger rates without seeming to give attention to the natural effect upon their own incomes. There are very few, if any, instances on record where employers have had their incomes reduced and at the same time have increased those of their employees. The anomalous position, however, is presented by railroad employees, through their representatives, demanding a reduction in freight rates and at the same time asking for an increase in their wage rates. * * *
>
> "If the railroad companies would come out in the open and declare for their right to a fair return either upon investment, or property valuation, and show, as it is believed they could show if they would quit playing with the subject, that they are entitled to what they are receiving, the public would be in a more liberal frame of mind toward both the railway employer and employee. As it is, the public believes the railroad companies are earning too much money; they take it for granted the employees are receiving too much money; and, therefore, are quite in accord with any proposition that looks to a reduction in the incomes of either or both of them. * * *
>
> "The *Railway Age* naturally leans toward the railway side of the discussion * * * and, quite in accord with its sympathies, it defends to the very best of its ability the railroad position so far as its being entitled to revenues is concerned and shows up the disadvantages to the railroads because the greater part of railroad earnings are being paid back to railway employees in wages. This, of course, is a terrific indictment against the rapacity and unfairness of railroad employees toward their employers."

The "Railway Trainman" in this article has called attention to a situation which ought not to exist. Since the net return the railways earn is not a measure of the reasonableness of wages, and since wages are not a measure of the reasonableness of the net return, why does each side disseminate alleged "propaganda" about what the other is receiving? It is true, as the "Railroad Trainman" says, that the *Railway Age* has been very active in disseminating information regarding the past and present wages of railway employees. This, however, has not been because we have believed that, measured by the standards of reasonableness mentioned in

the Transportation Act, the wages of most railway employees recently have been too high.

The *Railway Age* repeatedly has called attention to how high the wages now being paid by the railways are as compared with what they formerly were, because the present rates of the railways are being attacked with an energy and persistency almost without precedent, and the leaders of almost every railway labor union in the country are joining in and using the money of the labor union to finance this attack. The attack is being based by the railway labor leaders and the radical politicians with whom they are co-operating entirely upon the ground that the net returns the railways are being allowed to earn are excessive and sufficient to justify a reduction of rates. The attack, when based upon this ground, is entirely unjustifiable. It is not true, as the "Railroad Trainman" agrees, that the net return now being earned is excessive or sufficient to admit of any substantial reduction of rates. This being the case, the reduction of rates must, if possible, be prevented.

How is this to be done? Only by presenting to the public and its representatives the actual facts. Now, the facts are that the present rates have been and are now made necessary entirely by advances in the wages of railway employees; by increases in the prices of fuel and of materials and supplies, which are due principally to advances in the wages of coal miners and employees of manufactories; and by increases in railway taxes. The average wages of railway employees, of coal miners and of employees of manufactories, and the taxes of the railways, are more than double what they were in 1916 before railway rates were advanced, while the net operating income of the railways is less than it was in 1916, although since then an investment of four billion dollars has been made in their properties.

What good does it do to present such facts? The result must be, unless the reason of the public has been completely debauched by radical propaganda, to cause the public to see that if present rates are unreasonable then it must be that present wages, taxes and other railway costs are unreasonable, and that if these things are not unreasonable then the rates necessary to pay them are not reasonable. The propaganda, which seeks to show that the net return of the railways is so large that substantial reductions of rates can and should be secured by reducing the net return, is a wholly false and misleading propaganda. The "propaganda" which presents all the facts regarding the causes of present rates presents the situation to the public in its true light; and it is made necessary by the propaganda so diligently carried on to present the situation in a false light.

The "Railroad Trainman" calls attention to one of the most anomalous conditions that ever existed in any industry in this country when it refers to the fact that railroad employees through their representatives are constantly "demanding a reduction in freight rates and at the same time asking for an increase in their wage rates." If rates should be reduced it would immediately become the duty of railway managers to put forth the utmost efforts to secure reductions of wages. The "Railway Trainman" could have said more than it did about the reasons for the anomaly of railway labor leaders seeking at once reductions of rates and increases of wages. All classes of men seek to better their condition, even though at the expense of other members of society. But why are many railway labor leaders trying to secure reductions of the rates from which the wages must be paid? The pages of every railway labor union publication, except the "Railway Trainman" and perhaps one other, show the real reason is that they want to destroy the earning capacity of the railways and thereby force them into government ownership.

The "Railroad Trainman," in the article from which we have quoted, said: "It does appear, and we know we are not speaking in accord with many of our associates, that if more time were given to the primary purposes of labor organizations and less to other interests that divert the attention of the membership from these purposes the results to the members of the railroad organizations would be to their advantage." What that means, as we interpret it, is that when a majority of railway labor leaders devote more of their time and energy to promoting the true interests of the employees and less to propaganda and political activities to destroy private ownership the members of railroad labor organizations will be better off. With that view we agree. Until labor leaders do cease to attack rates and carry on political activities for the sinister ulterior purpose of wrecking the railways it will continue to be necessary constantly to point out to the public that the necessity for the present rates is mainly due to the present wages.

Long Distance Telephone Circuits for Railway Service

THE EXCELLENT RESULTS which the Missouri-Kansas-Texas is obtaining from its long distance telephone conversation circuit between St. Louis, Mo., and Dallas, Tex., illustrate the economy and also the convenience possible from the extension of railroad-owned facilities of this character. Telephone conversation circuits were constructed between adjacent division points between St. Louis and Dallas a few years ago at a cost of $60,000. At first these circuits were used only for conversations from one division point to the next but later they were connected through until the limit of transmission was reached.

Vacuum tube repeater stations were recently installed at Sedalia, Mo., Muskogee, Okla., and Denison, Tex., thereby completing a 767-mile long-distance circuit between the general offices at St. Louis and at Dallas. During the first 30 days that this circuit was in service it was used but little. However, since the officers have learned to appreciate its advantages, the circuit is now so busy with strictly railroad business calls that the installation of another circuit is being considered. The circuit is now handling approximately 250 conversations a week between points that require the use of two or more repeaters. In addition it is handling approximately 2,500 calls each week between the various intermediate terminals, which do not require the use of the repeaters.

The estimated charge of $750 a month for interest, depreciation, operation and rental of equipment, divided between the 15,000 calls a month that this one circuit carries, gives an approximate cost of five cents per conversation. This, of course, does not take into consideration the cost of line maintenance, the largest item of which is linemen's salaries and expenses. However this item would remain practically the same whether this circuit were on the poles or not.

During 1922 the railroad-owned conversational telephone circuits of the M-K-T carried a total of 250,140 long distance calls. Figured on the basis of three-minute conversations these calls would have cost $317,139.50 at commercial rates. The actual cost of handling these calls on railroad telephone plants, including rental of equipment, operators' salaries, interest on the investment and depreciation was $46,345.69, or less than 15 per cent of the tariff rates. The average cost per conversation to the railroad was 18 cents. The major portion of the cost, however, arises in the handling of local intercommunicating business.

One officer states that the St. Louis-Dallas long distance circuit has saved him several long trips as it has been possible to discuss important matters at length and to settle them by conversation over the telephone just as well as if he had been in the office of the man with whom the matter

was being handled. The saving in time and the increased efficiency of the officers of this road that has resulted from the telephone circuit are rather difficult to estimate but these advantages certainly offset the estimated cost of $750 per month that can justly be charged against the circuit.

Previous to the installation of this circuit relatively few railroad calls were made over commercial lines at the rate of $4.20 for the first three minutes and $1.40 for each additional minute between St. Louis and Dallas, bringing the charge for an ordinary call up to about $6. The average railroad does not feel justified in making many long distance calls over commercial lines and this practice is discouraged. However, as soon as such facilities are provided it is the experience that they are used fully. This demonstrates the need for such equipment and indicates that, in view of the relatively small investment involved, the installation of long distance telephone circuits may well be considered by many other roads.

Learning from Foreign Experience

ANY ADVANCEMENT in science, once it is made, does not long remain confined within the borders of the country of its origin. An Austrian surgeon discovers a new and highly successful method of dealing with some common human ailment and not many years elapse until his method of treatment is available all over the world—or at least that part where modern civilization obtains. Automobiles of the latest design, modern ships, turbine generators can be found all over the world. Few people in the western world do not at least know who Einstein is, whether they know much about his famous theory or not. When it comes to the science of railroading, however, knowledge does not move so rapidly. Mechanical improvements, it is true, soon become world property, no matter where they originate, but other phases of the problem which are quite as important have so far aroused only a mild interest outside of the country where they are met with. The experience of the rest of the world in dealing with its railway problem from an economic and political point of view is quite as important to the railroad man or public spirited citizen in this country as any improvement they may make in mechanical devices for use on the railroads. It is true, that, generally speaking, most foreign countries, with a few honorable exceptions, can show nothing but failure in the handling of their railroads, but failure is quite as important as a teacher as success can be. If we know fully the plight in which the railways of many countries find themselves and can examine into the causes, mainly governmental acts and policies, which have brought about this condition, we may be correspondingly wary of any agitation to adopt similar policies in this country.

It is with this view of the importance to the sound development of railroad policy in this country of an understanding of successes and failures in other countries that the *Railway Age* has for the past few years published a comparatively exhaustive summary of railway developments abroad in its Annual Review Number. In the last issue of this number, that of January 5, this section was the largest we have ever attempted. In it appeared much valuable information for any one who is disposed to learn what he can from the experience of others rather than to acquire all his knowledge by the trial and error method. The whole country suffers from unwise methods in dealing with the railroads. Railroad men cannot expect, however, that other persons will be more interested in foreign railway affairs than they are themselves. The first step in securing an understanding by the country and its legislators of the lessons in dealing with railways which the rest of the world has to teach is for our railroad men themselves to become well informed upon the subject so that they are able to discuss it fully and intelligently whenever the occasion may arise.

The Railways Interest in the Patent Office

FEW GOVERNMENTAL ACTIVITIES bear a more intimate relation to the railway supply industry than the patent office. This relation is scarcely less direct with the railways themselves. Without the protection afforded by patents few manufacturers would venture to spend any considerable amount of time or money to transform an idea into a practical device. It is the protection afforded by our patent law that has given such free play to American inventive genius that the railways of this continent lead those of the world in the variety and service afforded by mechanical equipment. For this reason railway supply manufacturers and railway men are keenly interested in the situation prevailing in the patent office.

When the Harding administration came into control in 1921, 42,000 patent applications were on file awaiting action. The bureau has a capacity for handling approximately 7,500 applications per month, while the number received was averaging 9,000. As a result on September 21, 1923, 74,256 applications were awaiting action. Since that time the bureau has been catching up by overtime work at the rate of approximately 1,000 per month and has reduced the number of applications pending to approximately 66,000. In spite of this fact some branches of the bureau are so far in arrears that 16 months is required to secure action on an application. The effect of this delay on the development of railway and other devices is self-evident.

Like all governmental departments the patent office is dependent upon Congress for appropriations and Congress is guided in turn by the recommendations of the director of the budget. Unlike most government departments, however, the patent office is more than self-sustaining, having earned more than it spent in every year until the last. This revenue comes from the sale of copies of patents, more than 10,000,000 of which are sold annually at a cost of 10 cents each.

While the director of the budget has indicated his appreciation of the importance of this work to American business by authorizing an addition to the force last year at a time when retrenchment was being enforced in other branches of the government, it is important that American business men show their approval of this plan by insisting that no reductions be made in this force and that, if possible, it be enlarged sufficiently to enable the patent office to clear up the arrearage so that the ordinary application can be acted upon within 30 days. No single step which the government might take would do more to stimulate inventive genius and to reduce litigation than this.

New Books

Proceedings of the International Railway Fuel Association, 1923. Edited by the secretary, J. B. Hutchison, 6000 Michigan Avenue, Chicago. 389 pages, 6 in. by 9 in. Flexible binding.

This volume contains the proceedings of the fifteenth annual convention of the International Railway Fuel Association, which was held at Cleveland, Ohio, May 21 to 24, inclusive, 1923. It contains the reports of committees and discussions on the following subjects: Boiler Feedwater Treatment; Fuel Stations; Locomotive Front Ends, Grates

and Ashpans; Fuel Accounting, Distribution and Statistics; Firing Practice, and Coal Storage. It also contains individual papers on the following subjects: Railway Fuel—A Reducible 13 Per Cent of Operating Expenses, by Julius Kruttschnitt; The Relation of the Coal Mines to the Railroads; Extension of Long Locomotive Runs; The Fuel Saving Aspect of Boiler Water Treatment; Lake Coal Handling; Classification of Coal; Economic Aspects of the Fuel Oil Situation; Value of Individual Fuel Performance Records; Incentives for Promoting Fuel Economy; The Superheater—Its Use and Abuse as a Fuel Saver; Economy in the Heating of Stations and Buildings; The Other Ten Per Cent; Locomotive Oil Burning Refractories.

Books and Special Articles of Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Bills Introduced and Laws Enacted Relating to Railway Operation—State Legislatures—Sessions of 1923, compiled by Committee on Relations of Railway Operation to Legislation, American Railway Association. 333 p. Published by American Railway Association, New York and Chicago.

Railways Under the Transportation Act, by H. T. Newcomb. Paper before Section of Economic and Social Science, American Association for the Advancement of Science. 26 p. Published by Fremont Payne, Inc., New York City.

Report on the Reconstruction of the Austrian State Railways, by Sir William Acworth, assisted by Dr. Robert Herold. 92 p. Published by World Peace Foundation, Boston, Mass., 50 cents.

San Pedro, Los Angeles & Salt Lake Railroad Company. Dissenting Opinion of Commissioner Eastman of the Interstate Commerce Commission in Case of the San Pedro, Los Angeles & Salt Lake Railroad Company Tentative Valuation. U. S. 68th Con., 1st sess. Senate Document No. 17. 62 p. Published by Government Printing Office, Washington.

Periodical Articles

Are "Captive" Mines on the Increase?, by E. W. Davidson. Production of railroad-owned mines, and coal-moving facilities of "coal roads." Coal Age, January 17, 1924, p. 73-76.

B. & O. Engine 1003, by Otto S. Beyer, Jr. Results of co-operation between shop unions and management as realized in this locomotive. Survey Graphic, January, 1924, p. 311-317.

Coal Freight-Rate Decisions Made and Pending Point to Normality, by Wayne P. Ellis. Coal Age, January 17, 1924, p. 85-86.

Forest Crops As Railway Tonnage. A Striking Example of What the Management of Forest Lands for Wood Products Means to the Railroads, by David T. Mason. American Forests and Forest Life, January, 1924, p. 36-37, 53.

Is the Industrial Centre Shifting to the West?, by Theodore M. Knappen. Railroad facilities as affecting the shift, and railroad tonnage as indicating the shift already accomplished. Magazine of Wall Street, January 19, 1924, p. 490-491.

Studies in the 20th Century Lyric. Presumably written in the year 2433, when railroads are extinct and literary critics deduce from "I've Been Working on the Railroad," which has somehow survived, what thing "railroad" meant in the 20th Century. Footnotes indicate what railroad literature may come to. Harper's Magazine, January, 1924, p. 274-276.

Letters to the Editor

[The RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about* 250 *words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]*

Organized Labor and Co-operation

WASHINGTON, D. C.

TO THE EDITOR:

In your issue of January 12 an anonymous correspondent raises certain questions with regard to my address on co-operation between unions and management, published in your issue of November 14, which I am happy to answer.

"Who pays the bill for this co-operative service?" The union pays the bill, out of its receipts from regular dues, just as it pays for every undertaking of benefit to its members. If the cost were divided among the Baltimore & Ohio mechanical employees it would amount, not to "$30 to $50 per year for each employee," but to a few cents apiece. The expense is small because, although we employ an expert consulting engineer, most of the work is carried on by regular union committeemen.

Your correspondent objects to my statement that in the task of co-operation there can be no substitute for genuine unions, on the ground that the existence of unions means a "middle man" between employers and employees. "We have been taught to think that co-operation means get together between boss and man." In return I will ask how can thousands of men organize planned co-operation with anybody except through a small number of committeemen or elected representatives? You cannot run a railroad by a New England town meeting. The only real difference between union men and their opponents on this question is that union members insist on selecting their own spokesmen without outside control, whereas some employers want to specify who shall be "selected" and what the method of "selection" shall be.

"If you think," writes your correspondent, "a labor union is democratic ask a cool-headed member who advocated reason and caution when the leaders were pulling for a strike. Ask him what voice he had in the levying of taxes and the making of appropriations. Ask him what happened when he asked for information about Grand Lodge expenses. Ask him how much he was promised in strike benefits before the strike of 1922 and how much he actually received." Well, ask him. If he is honest he will tell you that no strike is ever ordered by railroad union officials; strikes are merely authorized, and then only after a mandate from the membership on the basis of a referendum vote. Union dues are fixed by the constitutions and by-laws, which are framed by elected representatives of the members and may at any time be changed by the members through the convention or initiative and referendum. No special taxes or assessments may be levied without the vote of the members. A thorough accounting of all income and expenses of the Grand Lodge, certified by a chartered accountant is made available to every member semi-annually. No strike benefits were promised before the strike of 1922, but on the contrary the members were specifically informed that there was no national fund for this purpose, and in the nature of things there could not possibly be, for a strike of half a million men. Of course, substantial relief was given to the most needy.

Your correspondent expresses surprise that union officials,

who have on occasion opposed management policies, are now willing to co-operate. There is no mystery in that. Unions will always fight their enemies and co-operate with those who are willing to be reasonable and meet them half way.

Lastly, allow me to call attention to the fact that your correspondent conceals his insinuations between a pen-name and does not dare to affix his signature and his position on the railroads.

WILLIAM H. JOHNSTON,
President, International Association of Machinists.

Decretion

SALT LAKE CITY, Utah.

TO THE EDITOR:

Referring to Dean Raymond's analysis of my letter of December 22:

A depreciation reserve is built up through sufficient operating revenues for the purpose of meeting retirements and renewals of property units. In my example of the two automobiles it was stated that, if built up, the reserve was for that purpose. In Dean Raymond's analysis, he uses the $500 reserve representing decretion (that proportion of depreciation that will not be restored in maintaining the property) for investment purposes to "enlarge the plant," and erroneously reduces the resulting $2,000 investment of all owners in the property to $1,500, the latter representing only the money financed by the original purchaser from other resources than the reserve. Under present utility accounting practice, the fact that a reserve is reinvested in the utility property does not extinguish it, or reduce the capital assets in the total investment.

Dean Raymond uses this simple example to reinvest only that part of the reserve representing decretion, which he finds has no function in maintaining the property, in a permanent investment in the utility property, and "without regard to necessity of liquidation," as stated in my letter "Funding Depreciation Reserve," issue of December 1. This is proof that the acquirement of the reserve ($500) to meet retirements and renewals was not necessary.

Further amplifying this operation, had the owner of automobile "A" not purchased "B," he could not have used any of the reserve as a permanent investment in the property, because it would all be necessary to restore "A" in 1910, and therefore, in this case there would be no decretion. Had he purchased "B" in 1906 instead of 1905, having a $600 reserve, he could only use $400 of it, representing decretion for permanent investment, as Dean Raymond used the $500 in his analysis, the remaining $200 being necessary to restore automobile "A" in 1910. Had he purchased "B" in 1907, he would have a $700 reserve, of which he could only use $300, representing decretion for permanent investment purposes, the remaining $400 being necessary to restore "A" in 1910. And so on to 1910 when not a dollar of his reserve could be used in the purchase of "B," and therefore there is no decretion when "B" is purchased at that time.

On a composite property of many units "decretion," or that proportion of depreciation that will not be restored in maintaining the property, accrues not only from different dates of installation but from different lengths of service life of property units. It has no violent fluctuations when additions, retirements, and renewals from time to time have been a small percentage of total investment. It reaches its maximum of 50 per cent of the cost of the depreciable property when retirements and renewals become a constant. A very good example of this maximum is in a tie system.

If Dean Raymond is going to measure decretion in each utility, so that its proportion of the reserve may be reinvested permanently in extensions to the property, I will say that it can, and think it ought to be computed on each utility as it exists at time of valuation—but this never has been done.

MARCUS A. ROBY.

More Opinion About Proper Whistling

HANOVER, N. H.

TO THE EDITOR:

I have read with much interest the letter of Mr. Parvin in your issue of January 12, from which it appears that on the Pere Marquette, as well as on the Bangor & Aroostook and on one division of the Pennsylvania, there are locomotive runners who take an intelligent interest in the correct and sensible use of the steam whistle, and superintendents who have time to direct and energize this interest. It is an event of consequence that three superintendents should thus respond to the appeal that you made. I have not ridden over either one of these roads lately; but my impression, from what I have noted on other roads, was that careless whistling was on the increase, or at least was as prevalent as ever.

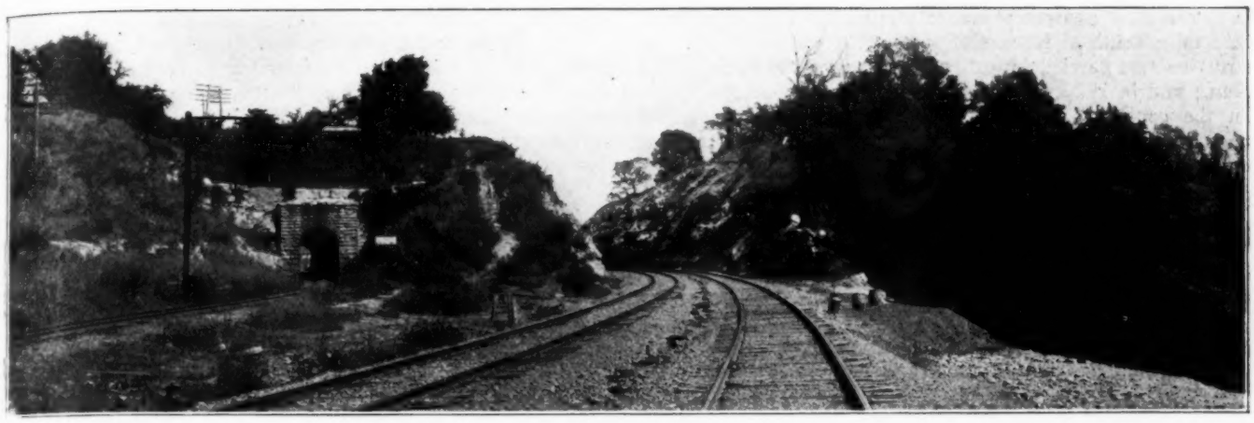
From what I have read in your columns within the last year or two I judge that the experiences reported on the Pere Marquette are typical of what happens on nearly every railroad where the attempt is made to improve conditions in respect to whistling. The claims of people who are struck by trains, that the whistling is inadequate, lead to an order by the management to do more whistling. If this order is carried out faithfully, there is then too much of it; so much noise that well-grounded complaints begin to come from another direction; from the "innocent bystander"—that is, the residents along the line. Then the superintendent, if he is a reasonable man, takes back a part of his radical stuff. How anybody but a lawyer, shutting his eyes to everything outside of his own narrow argument, can countenance the continuance of whistle blasts for a quarter-mile is beyond the comprehension of normal-minded men in these parts.

Surely, it must be that your readers generally will agree that Mr. Elmer's plan of instruction is the most truly sensible of the three which you have noticed.

I desire to protest, also, against the unfairness of the policy of authorizing the mitigation of the whistle nuisance in thickly settled regions but not elsewhere. Dwellers in small villages have their rights; also the farmers' wives. Again, look at the cost. Somebody has figured out, by quite conservative calculations, that thousands of dollars are wasted monthly in making steam, to blow whistles, where the blowing is practically useless.

It is to be hoped that you can keep up this agitation for reasonable whistling. To be able to report 90 per cent of satisfactory whistling cannot be said to represent a very good accomplishment. The superintendent who feels any satisfaction in that degree of efficiency needs further education. The letter from New Haven in your issue of December 8 deserves a very careful re-reading. The whistle-magnifiers have been trying for years to diminish the death lists at highway crossings by constantly increasing their expenditures of steam; and what have they to show for it? The tragedies increase in frequency. The careless motorist must be protected from his folly by some other means. Look at the record of automobile disasters at places other than railroad crossings. It is as plain as a pikestaff that there is a small percentage of autoists who are incurable chance-takers; and it is the height of futility to keep our locomotives screeching in the ears of all the rest of the people, day and night, in the attempt to accomplish the impossible task of bringing these reckless ones to their senses.

VERMONT.

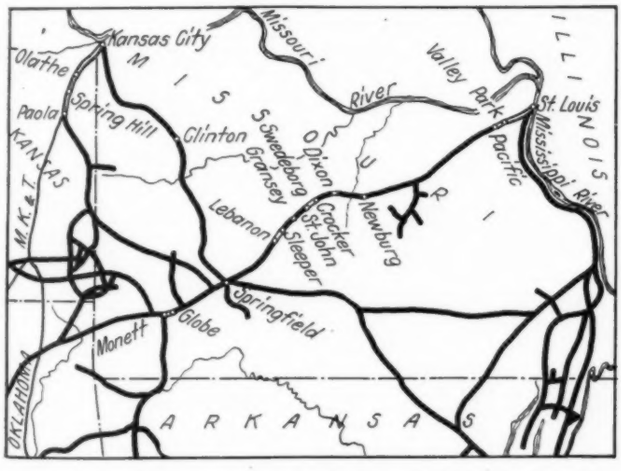


A View of the Frisco New Track Around the Old Meremac Tunnel

Frisco Makes Important Line Improvements

Double Tracking and Grade Reduction at Several Points Effect Marked Saving with Limited Expenditures

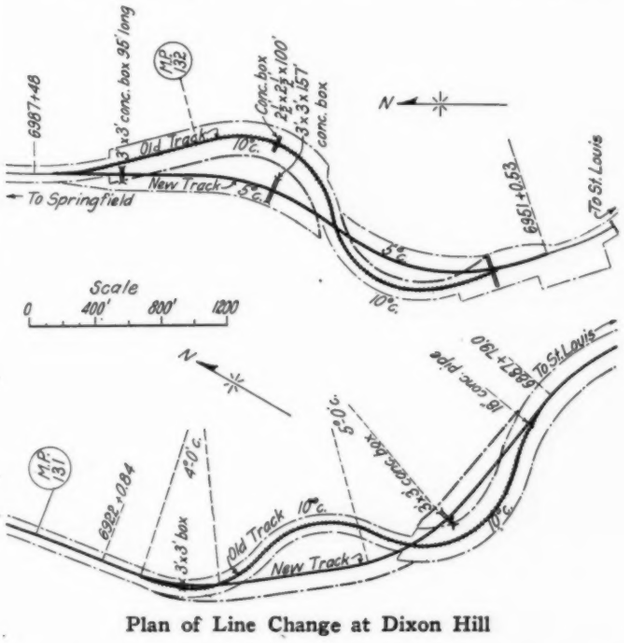
THE ST. LOUIS-SAN FRANCISCO has recently completed a construction project near St. Louis which has brought about a marked improvement in operating conditions in that vicinity. The work involved the double tracking of about five miles of main line, together with a reduction in grades, in the picturesque but rough country



The Frisco in Missouri, Showing Points of Line Improvement

between Windsor Springs, Mo. (13 miles west of St. Louis), and Valley Park. Included in the project, and constituting a principal feature of the engineering work undertaken, was the elimination of a tunnel which had long been the limiting overhead clearance on the entire system. The result has been to provide 18 miles of continuous double track out of St. Louis, leaving a gap of only nine miles yet to be completed in order to provide 34 miles of double track out of that city. A 12½ per cent increase in the tonnage rating has also resulted, the clearance restriction has been removed and the track capacity has been increased, all of which is estimated to show a marked saving in fuel and train crew expenses.

This project is the most important one of several undertaken during the year, and is a part of a general program in the prosecution of which the Frisco has put limited funds to the most effective use. This program was inaugurated in 1920 and provides for the carrying out of double tracking, grade reduction and curve elimination work of moderate proportions each year at the several points where the greatest immediate benefit can be had, but with a view at the same time to a general plan of permanent improvement work. Where double tracking has been done it has generally been built in short sections which could be joined eventually. In pursuance of this plan the Frisco has prosecuted double tracking at five points. One section is between Kansas



Plan of Line Change at Dixon Hill

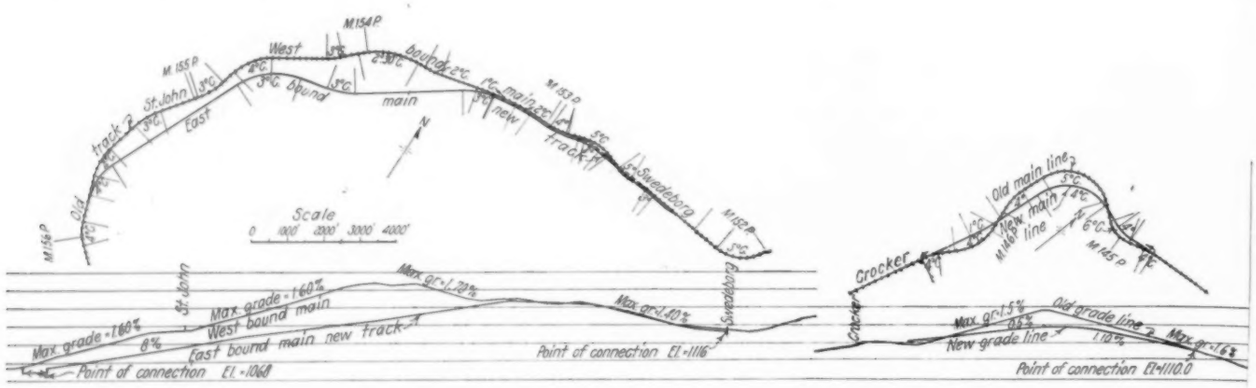
City, Mo., and Paola, Kan., a distance of 42 miles, over which the Kansas City trains of the Missouri-Kansas-Texas are operated and where the combined traffic of the two roads during times of heavy business was more than could be handled economically on a single track. The second track

in this section was completed to Olathe, Kan., a distance of 20.5 miles south of Kansas City in 1900; then, in 1921, construction was carried 10 miles farther south to Spring Hill, Kan.; and in 1923, the second track was completed to Paola. In the construction between Olathe and Paola the grade of the northbound track was reduced from 0.7 per cent to 0.5 per cent by lowering both the old and new tracks at summits, and lifting the new track above the old in sags.

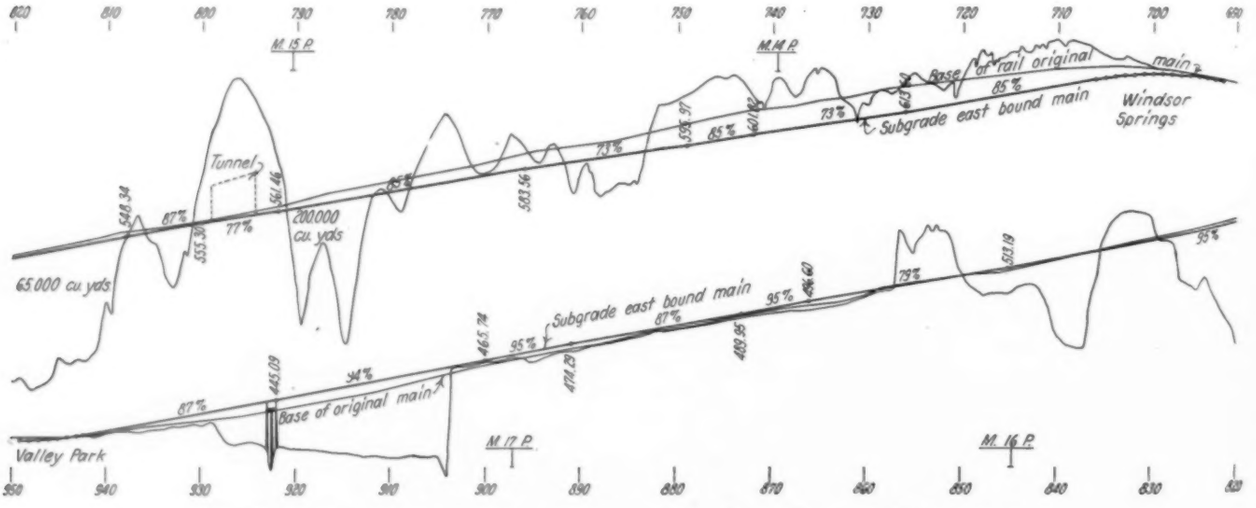
The other double tracking has been done on the main line of the Frisco between St. Louis, Mo., and Monett. This line was built with the ruling grade over 1½ per cent in each direction and handles a heavy traffic, particularly oil and agricultural products, eastbound. The general plan contemplates the double tracking of the entire line between these two points, and the reduction of grades to about 0.8 per cent in each direction. Progress, however, has been confined to relieving those portions of the line subject to the greatest congestion and where grades could be reduced simultaneously. Prior to 1923 this had resulted in the prosecution of double track work at three locations.

Second track was built from the end of the Monett yards east four miles to Globe, Mo., for eastbound use and the grade of the old line was reduced from 1.1 per cent to 0.8 per cent to conform to the grade of the new track. Second track was also built for eight miles between Sleeper, Mo., and Lebanon, midway in the second engine district out of St. Louis. This is a natural meeting point for trains between Newburg, Mo., and Springfield, and furthermore the section contains 1½ miles of 1½ per cent grade against eastbound traffic. The new track for eastbound traffic, constructed about a mile south of the original line, avoided the congestion at Lebanon and reduced the maximum eastbound grade to 0.8 per cent.

The principal double tracking undertaken on this line, however, was that between St. Louis and Pacific, a distance of 34 miles. This embraces the territory over which the Frisco maintains suburban service and is also a frequent meeting place for trains. In 1904, second track was built from St. Louis to Windsor Springs, a distance of 13 miles; then in 1920, an additional section of seven miles was undertaken from Eureka to Pacific, the terminus of the suburban district, leaving a gap of 14 miles to be completed. It was to double track the most formidable portion of this gap that the Valley Park-Windsor Springs project was undertaken.



Characteristics of Work Done (1) Between St. John, Mo., and Swedeborg and (2) at Crocker



Profile of First and Second Track Between Valley Park, Mo., and Windsor Springs

Hilly Country East of Valley Park

The section between Valley Park and Windsor Springs is a hilly one where the line, climbing out of the Meramec river bottom along the foot hills, necessitates heavy cuts and fills, rising from Valley Park on a 1 per cent grade uncompensated for curvature to Meramec Highlands, three miles distant, and thence on a maximum grade of 1.15 per cent to Windsor Springs, where the slope breaks downward. Since the best that could be done in the way of grade revision was to avoid certain sags in the existing line, the plan of

double tracking was to follow the old location, building the lower end of the new line higher than the old, and at the top of the hill lower, so as to reduce the eastbound grade. Work was done by steam shovels working in the cuts, hauling the material over the old line to deposit in the embankments. The new track was built on alternate sides of the existing line, principally to avoid heavy fills and to balance as nearly as possible the excavation and embankment quantities.

The profile of the westbound main was not materially changed. As a result, upon leaving Valley Park the eastbound track is higher than the westbound for a distance of about 3,000 ft., with a maximum difference in elevation of 7 ft. To provide for this at the least expense, advantage was taken of the presence of suitable rock in the excavated material to build a stone retaining wall between the two main tracks. The result of the grade separation was to reduce the grade between Valley Park and Meramec Highlands to a maximum of 0.95 per cent compensated for curvature.

Beyond Meramec Highlands the existing track was built in a cut for practically the entire distance to Windsor Springs. By deepening the cuts for the eastbound track below the grade of the original main line it was possible to reduce the grade to 0.85 per cent compensated for curvature. The original track was left unmolested to serve as a westbound main, and new track was built about 50 ft. to the south, where it could be established on a lower grade. As a result the grades were separated for two miles with the eastbound track 13 ft. below the westbound for a considerable distance.

A Section of the Line Between Valley Park and Eureka, Showing the Meremac River on the Right

The Meramec Tunnel Was Eliminated

The chief problem involved in the double track construction was the elimination of the tunnel at Meramec Highlands which was 473 ft. long with a width of only 13 ft. and a height of 17½ ft. above the top of rail. Aside from accommodating but a single track and causing considerable discomfort to enginemen and passengers on account of the smoke from the locomotives, this structure constituted the limiting overhead clearance of the entire system. The problem was met by building an open cut through solid rock on a line 185 ft. south. This cut is about 1,000 ft. long, 42 ft. wide at subgrade with a maximum depth of 75 ft.

Looking East from Valley Park Where the Grade Was Separated. The New Track Is on the Left

Both tracks were laid through the open cut and the tunnel abandoned for main line use, although the track through it was left intact for siding use. The removal of the rock in the cut opposite the tunnel, of course, required considerable blasting which was done with the utmost precaution to avoid injury to the tunnel. This cut was taken out in shallow lifts, two portable air drills being employed for the drilling and two steam shovels for excavating and loading the loosened material. This furnished the material for extensive fills required on each side, approximately 65,000 cu. yd. being hauled to the west and 200,000 to the east. Owing to the height, the abruptness of the hill and the necessity of starting the cut from the top, it was necessary in the beginning to build a long switch back over which to handle the narrow gage cars. The work in this cut was carried on simultaneously with that elsewhere, and was completed in time to permit the operation of trains over the entire section on July 26, 1923.

Complete St. Louis Section This Year

As the project between Windsor Springs and Valley Park was nearing completion, it was decided to prosecute the double tracking of the 9.3 miles stretch between Valley Park and Eureka. The greater part of the line between

Preparing to Double Track the First Bridge West of Valley Park

Valley Park and Eureka lies in the valley of the Meramec river, crossing the river at Valley Park and again about 1½ miles east of Eureka. This work requires the building of 7½ miles of new track after absorbing a mile and a half of existing passing tracks. The embankments considerably exceeded the excavation in cuts, and two borrow pits were purchased in which material was loaded with steam shovel and hauled to the embankments on the existing line. A small amount of the embankments was made by side borrow with teams.

The principal problem in this work arose in connection with the bridges over the Meramec river. The bridge east of Eureka consists of three 153-ft. deck Warren trusses with a 74-ft. deck plate girder at each end, all carried about 40 ft. above the river on stone piers and abutments. This bridge is to be double tracked by extending the piers and abutments with concrete, and erecting additional spans similar to the old ones. At Valley Park the bridge consists of three 150-ft. through spans with one 33-ft. deck plate girder at the west end. The double tracking of this bridge will consist of extending the existing stone piers and abutments with concrete and erecting a second through truss bridge for the new track. In both instances the work required the construction of sheet steel piling cofferdams and the driving of wooden piling to support the piers and abutments. Approximately 14,000 lin. ft. of steel sheet piling and 24,000 lin. ft. of wooden foundation piling were required. The foundation work was carried on from barges equipped with the necessary steam hoists and pile drivers.

Except for the erection of the steel bridge spans and for ballasting the new track, the work on this section is now about completed having involved about 51,000 cu. yd. of earth excavation in cuts, 180,000 cu. yd. of borrow and 60,000 cu. yd. of loose and solid rock excavation. In addition to the river bridge piers and abutments there were a

Looking West from Windsor Springs with the Old Line on the Right

number of concrete culverts as well as piers and abutments for small girder bridges, involving about 2,000 cu. yd. of concrete. The largest of the culverts is a 12-ft. by 12-ft. box, 95-ft. long, which replaces a 33-ft. deck plate girder carried on stone abutments. This section will be completed in the early part of this year and the entire 34 miles of

Looking West Toward Valley Park with the New Line on the Left

suburban territory out of St. Louis will then be completely double tracked.

Other Work Completed

During the last year, in addition to the work described above, a section of second track 3.7 miles in length was constructed between Swedeborg and St. John, Mo., about 155 miles west of St. Louis. The old line between these points was on a maximum 1.5 per cent grade opposing eastbound traffic. The building of a second track on a new location to the south gave a route for eastbound traffic with a maxi-

mum grade of 0.8 per cent and 92 deg. less curvature. As with the double tracking done elsewhere, the old line was not changed but is used as westbound main.

Line improvement was also undertaken at Crocker, Mo., six miles east of Swedeborg. This work extended for 1.6 miles over a hill, on the west side of which the original grade was 1½ per cent, and on the east side 1.4 per cent. A more direct route was selected and a section of new line constructed, the outcome of which is the reduction of the curvature to four degrees in place of six degrees, the elimination of 165 deg. of curvature and the reduction of the grade to a maximum of 0.5 per cent eastbound and 1.1 per cent westbound. The new line crossed the old at two points, and the old track was abandoned and taken up.

At Garnsey, Mo., 165 miles west of St. Louis, a reduction in the grade was also made. The original line was on a 1½ per cent grade, opposing eastbound traffic, and by lowering the original track for a distance of a mile, the grade was reduced to 0.7 per cent. The grade reductions at Crocker, Swedeborg and Garnsey resulted in a 37½ per cent increase in eastbound tonnage rating over the entire sub-division and a 12½ per cent increase in westbound rating on account of lowering the summit at Crocker.

Two changes of line on Dixon Hill, near Dixon, Mo., 130 miles west of St. Louis, complete the work undertaken last year. The original line at this point was constructed with 10 deg. reverse curves. By changing this line for a distance of about 3,000 ft. at each location, 5 deg. curves with tangents between were substituted and the total curvature on the two locations decreased 301 deg. The work at each place involved about 60,000 cu. yd. of grading, mostly solid rock. One of the jobs has been completed, and the other will be finished early in 1924.

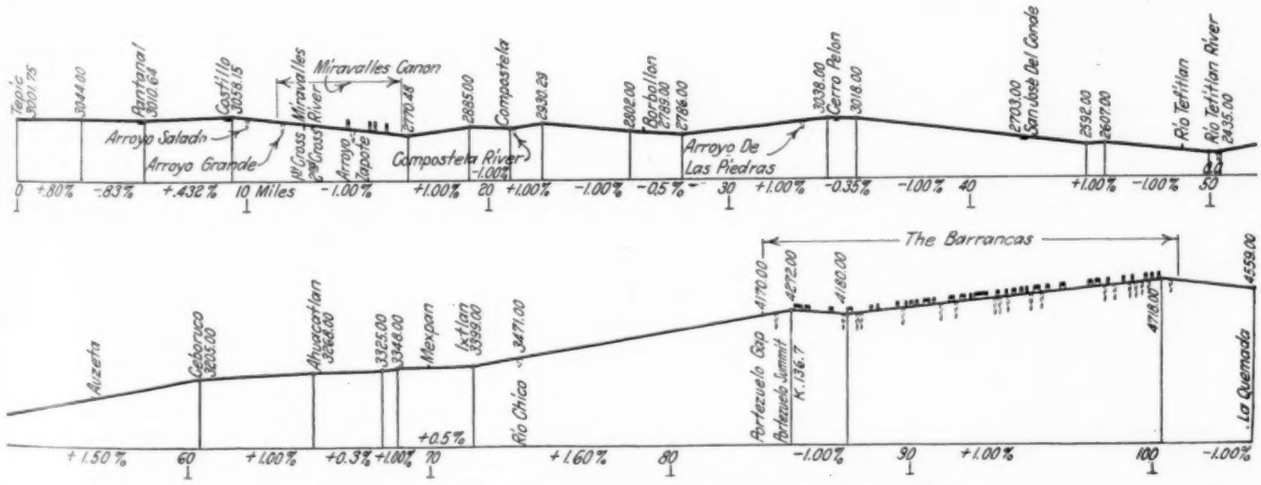
This work has been carried on under the direction of Colonel F. G. Jonah, assistant to the president and chief engineer of the St. Louis-San Francisco, and under the supervision of H. B. Barry, principal assistant engineer, both with headquarters at St. Louis. The construction work from Windsor Springs to Meramec Highlands and from Valley Park to Eureka was undertaken by Grant Smith & Co., St. Paul, Minn., Yale & Reagan, Chicago, sub-contracting part of the steam shovel work and the Hedges-Weeks Construction Company, Springfield, Mo., sub-contracting the concrete bridge and culvert work. The seven miles between Eureka and Pacific were constructed by the List & Gifford Construction Company, Kansas City, Mo.; the work between Sleeper and Lebanon and that near Dixon, Mo., was done by Scott & White, St. Louis, while Allhands & Davis, Joplin, Mo., performed the grading and culvert work between Globe and Monett.

Southern Pacific Extends Its Mexican Line

Road Is Spending $5,000,000 for Betterments and $11,000,000 for 103 Miles of New Line

THROUGH THE EXPENDITURE of $5,000,000 for the rehabilitation and improvement of the existing lines of the Southern Pacific of Mexico between Nogales, Ariz., and Tepic, Mex., and the closing of the 103-mile gap between Tepic and La Quemada at a cost of $11,000,000, the Southern Pacific is bringing to completion an all-rail route and mining resources of the west coast of Mexico, the physical characteristics of which are similar to those of southern California except that the more southerly latitude affords opportunities for the more general growing of tropical vegetation.

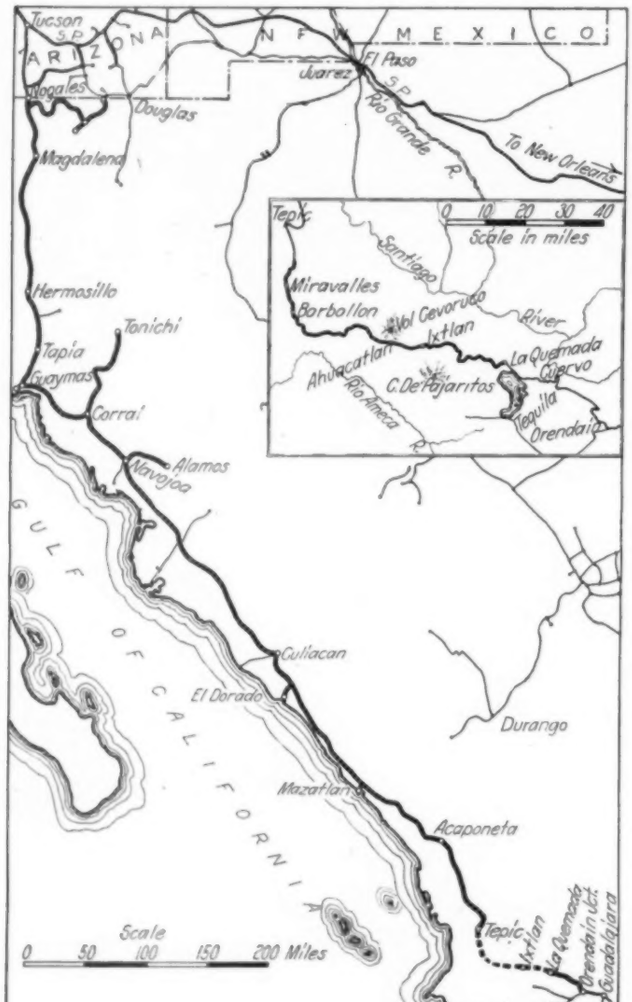
The work now in progress comprises the completion and thorough rounding out of a project interrupted 10 years ago



Profile of the 103-Mile Line Between Tepic and La Quemada

1,730 miles long between the international border and Orendain, where connection is made with the line of the National Railways of Mexico via Guadalajara to Mexico City, a further distance of 653 miles. While this extension is expected to afford considerable through traffic, the principal object of the Southern Pacific in Mexico is to develop the agricultural by the Mexican revolution. At that time the main line of the Southern Pacific of Mexico had been completed from Nogales south to Tepic, a distance of 1,399 miles, while an extension had been completed from the connection with the Mexican National railway at Orendain northward for 70 miles to La Quemada. The gap between these two completed sections of

the line, a stretch of 103 miles, comprises by far the most difficult and expensive portion of the entire location along the west coast of Mexico and work had not been started on this section at the time that the revolution interrupted the prosecution of this venture. It is the completion of this rail con-



Map of the Southern Pacific of Mexico with a Large Scale Map of the Location Between Tepic and Orendain

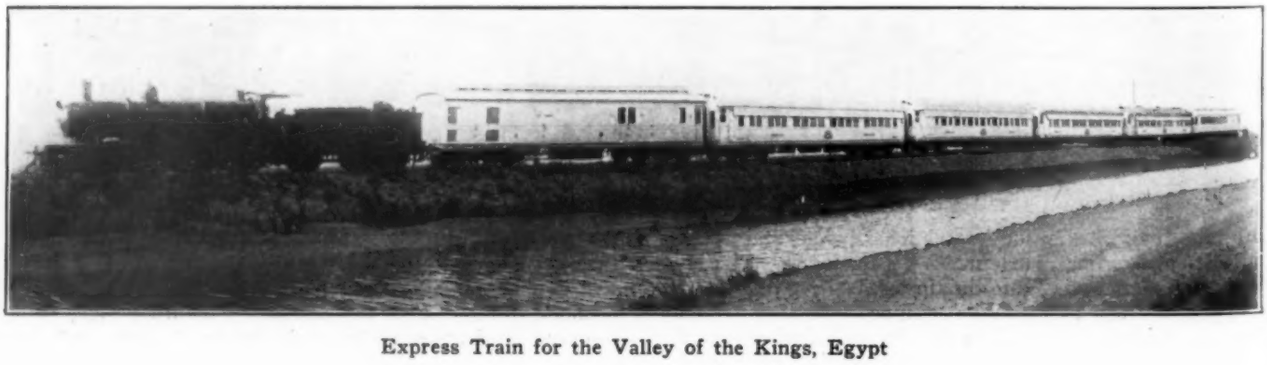
nection between Tepic and La Quemada which comprises the most formidable feature of the work which the Southern Pacific now has in progress in Mexico. The line is being constructed with 1.0 per cent grades in each direction, with the exception of a section of 10 miles of 1.5 per cent and another section of 12 miles of 1.6 per cent grades opposing the southbound movement. Curvature on the line is limited to a maximum of nine degrees.

The construction of this 103 miles of line involves 2,640,000 cu. yd. of grading of which 1,030,000 cu. yd. is earth, 470,000 cu. yd. is loose rock and 1,140,000 cu. yd. is solid rock. Tunneling also forms an important item of the work, there being 36 tunnels with an approximate total length of 27,000 ft., the longest tunnel being 2,920 ft. long, practically all of which is in solid rock. The bridge work comprises 29 steel bridges and viaducts having a total length of 6,670 ft. All of the structures on this new line are of a permanent type, either steel, concrete or stone masonry. Concrete is used for the great bulk of the substructure work, although rubble masonry is applied in the case of some of the smaller arch culverts and considerable use is made of corrugated iron pipe in the numerous smaller embankment openings.

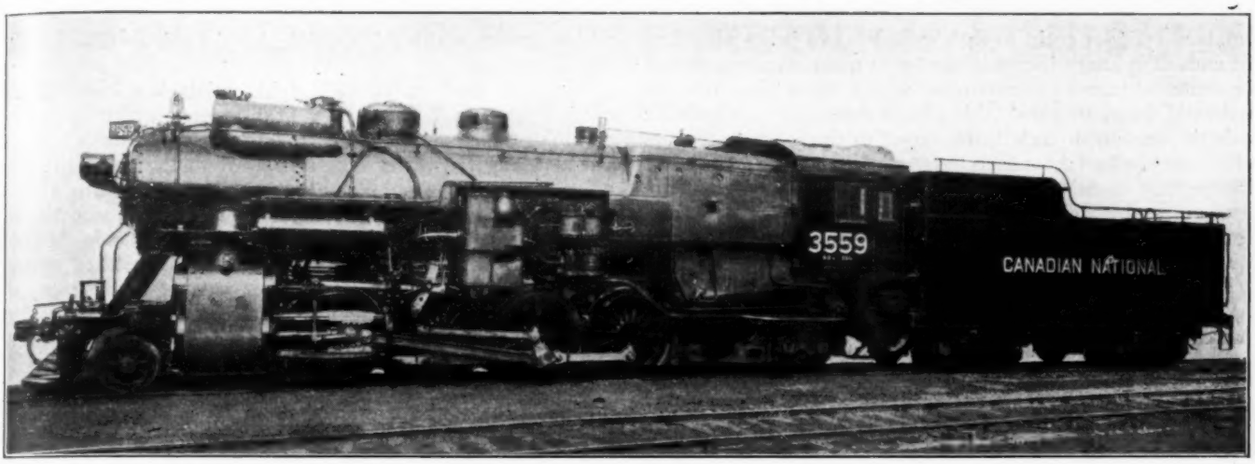
The heaviest portion of the line is in what is known as the Barrancas, a stretch of 20.3 miles in a heavy, rolling sugar-loaf formation at the foot of de Pajaritos peak. The location here is supported on a bench cut in the face of the slope which is about 1,000 ft. above the base of the canyon at one point. It requires heavy curvature with 32 tunnels totaling 26,000 ft. in length and 19 viaducts having a total length of 4,810 ft. This 20 miles of line alone involves an expenditure of $6,000,000. The grading aggregates 1,705,000 cu. yd., of which 510,000 cu. yd. is earth, 320,000 cu. yd. is loose rock and 875,000 cu. yd. is solid rock. The construction is made especially difficult by reason of the absence of any roads except an old Spanish highway in the bottom of the canyon. As a result the contractors are required to build many miles of trails in order to reach the work. Much of the construction is being done with modern equipment, steam shovels and narrow-gage cars, but resort is also had to such primitive methods as the use of baskets for moving earth.

Outside of the Barrancas the heaviest work is concentrated largely in the Miravalles canyon, a short distance south of Tepic where the location involves three steel viaducts, totaling 1,185 ft. and four tunnels of an aggregate length of 1,994 ft.

The major portion of the work, 90 miles, is being handled by the Utah Construction Company of Ogden, Utah. Twohy Brothers of Seattle, Wash., had the contract for 10 miles at the north end which is now complete while three miles at the south end is being constructed by company forces. The work was opened in the spring of 1923 but heavy rains prevented the undertaking of active operations until late in the year. It is hoped that the line will be completed as far as Ixtlan, 72 miles, during 1924 and that the entire line will be completed by January 1, 1926. This line is being built under the supervision of H. B. Titcomb, president, Tucson, Ariz., and E. B. Sloan, chief engineer, Empalme, Mex., Southern Pacific of Mexico.



Express Train for the Valley of the Kings, Egypt



Canadian National 2-8-2 Type Locomotive with Belpaire Firebox

Mikado Type Locomotive for Canadian National

Boiler with Belpaire Firebox and Special Features Reduces Troubles from Bad Water in Western Canada

WHEN CONSIDERING the type and design of locomotive to proceed with for handling the increasing traffic of the Western Region, the motive power officers of the Canadian National decided on a Mikado type with a Belpaire boiler as this type of boiler permitted of greater heating surface and steam space. Forty-five of these engines have recently been completed, 35 at the Montreal Locomotive Works and 10 at the Canadian Locomotive Company, Kingston. The locomotives without the booster are classified on the road as S-2-a and are numbered from 3525 to 3559 inclusive. The locomotives with the booster are classified as S-2-b and numbered from 3560 to 3569 inclusive.

A large number of the details used in the construction of these locomotives are also common to the previous order of Mikados and many of the details are common to all Canadian National modern power. The ten engines built at Kingston are identical with those built at Montreal, except for the few changes made necessary on account of the application of the booster to these engines.

The Boiler and Accessories

The boiler is designed with a Belpaire firebox and extended wagon top and conical bottom barrel, the first course being 78 in. and the largest course 90 in. in outside diameter. The firebox proper is 108⅛ in. by 84¼ in. inside and the combustion chamber is 22½ in. long. The boiler horsepower in per cent of cylinder horsepower is 96 per cent.

There are 240, 2-in. tubes and 40, 5⅜-in. flues, 18 ft. 0 in. long; the flues are electrically welded into the back tube sheet according to Canadian National standard practice.

The fireboxes are provided with what is known as extruded side sheets. This form of side sheet is being developed on the Canadian National in an effort to overcome troubles due to bad water. With the ordinary flat side sheet, any hammering of the staybolts has a tendency to open up the sheet around the thread of the stay until eventually nothing but the bat head of the stay is holding the sheet. The extruded sheet referred to is so arranged that any hammering of the stays will close the sheet in onto the thread.

These locomotives have been equipped with Duplex stokers and the feedwater supply to the boiler is by means of a Worthington feedwater heater and pump on the left side and that on the right is supplied by a Hancock type E. A. inspirator equipped with 3,500-gal. tubes.

The grates are of Canadian National standard design, the rocking grate bars being of alloy cast steel with detachable lugs. They are operated by Franklin power grate shakers. The ash pans are the Canadian National standard hopper type, the location of the hinges being such that the doors close of their own weight. It was feared that on account of the flatness of the ash pan, owing to the application of the Delta trailing truck frame in connection with the booster, that the grates would be liable to burn out quickly and, in order to overcome this possibility, an auxiliary hopper has been placed on each side of the ash pan, outside of the trailing truck frame. These auxiliary hoppers greatly facilitate the cleaning of the pan and prevent the collection of cinders on the coping.

The ash pans are also equipped with a sludge ejector which consists of a 1¼-in. pipe from the delivery pipe of the inspirator to the ash pans, with a branch extending into each hopper and a valve operated from the cab. The arrangement is specially valuable as it permits the direction of hot water into the pans to thaw them out when the locomotives arrive at a terminal in freezing weather with the pans partly filled.

The superheater, which has 885 sq. ft. of heating surface, is the Robinson type and is equipped with forged return bends.

The smoke stack is the railway company's standard three-piece type, the center piece forming the base and fitted to the smokebox, extending down into it. The stack proper and the stack extension fit inside and butt together in the base extension, thus forming protection from the impinging action of the exhaust for the center piece, which constitutes the part that must be fitted to the smokebox.

Engine and Running Gear

The cylinders are 27-in. diameter by 30-in. stroke; driving wheels 63-in. diameter with 56-in. cast steel centers; boiler pressure 185 lb. and the rated tractive force 54,600 lb. The cylinders follow Canadian National standard design, being equipped with railway standard by-pass valves and four

standard cylinder cocks to each cylinder, two being placed at the ends of cylinder barrel in the usual manner, one placed at the center of barrel and connected with a drain pipe from the bottom of the steam chest (this pipe is covered by the cylinder jacket), the fourth cock being piped to the exhaust cavities which are drained from each quarter. All eight cylinder cocks are operated in unison by one set of levers. The cylinders are also equipped with railway standard relief valves. The crosshead is fitted with the Rogatchoff adjustment which permits the adjustment of the shoes to take up wear.

Steam distribution is provided for by a Walschaert valve motion controlled by a power reverse gear and all parts are interchangeable with previous Mikados. The diameter of the piston valve is 14 in. and the setting is as follows: Travel 6½ in.; lap 1 in.; lead ⅛ in.; exhaust clearance 0 in.

The rear end is fitted with a Commonwealth cast steel cradle casting. The trailing truck is of the Commonwealth constant-resistance type with 43-inch diameter wheels.

Table of Dimensions, Weights and Proportions

Railroad	Canadian National
Type of locomotive	2-8-2
Service	Freight—Western region
Cylinders, diameter and stroke	27 in. by 30 in.
Valve gear, type	Walschaert
Valves, piston type, size	14 in.
Weights in working order:	
On drivers	227,600 lb.
On front truck	29,500 lb.
On trailing truck	57,700 lb.
Total Engine	314,800 lb.
Tender	185,100 lb.
Wheel bases:	
Driving	16 ft. 6 in.
Total engine	35 ft. 9 in.
Total engine and tender	68 ft. 10 in.
Wheels, diameter outside tires:	
Driving	63 in.
Front truck	36 in.
Trailing truck	43 in.
Boiler:	
Type	Belpaire, Ext. wagon top
Steam pressure	185 lb.
Fuel, kind and B. t. u.	Bituminous coal
Diameter, first ring, inside	76 7/8 in.
Firebox, length and width	108⅛ in. by 84¼ in.
Arch tubes, number and diameter	4—3 in.
Combustion chamber, length	22½ in.
Tubes, number and diameter	240—2 in.
Flues, number and diameter	40—5¾ in.
Length over tube sheets	18 ft. 0 in.
Grate area	63.26 sq. ft.
Heat surfaces:	
Firebox and comb. chamber	268 sq. ft.
Arch tubes	26 sq. ft.
Tubes	2,249 sq. ft.
Flues	1,008 sq. ft.
Total evaporative	3,551 sq. ft.
Superheating	885 sq. ft.
Comb. evaporative and superheating	4,436 sq. ft.
Tender:	
Style	Water bottom
Water capacity	8,300 Imp. gal.—10,000 U. S. gal.
Fuel capacity	12 tons
General data estimated:	
Rated tractive force, 85 per cent	54,600 lb.
Cylinder horsepower (Cole)	2,427 hp.
Boiler horsepower (Cole) (est.)	2,322 hp.
Weight proportions:	
Weight on drivers ÷ total weight engine, per cent	72.3
Weight on drivers ÷ tractive force	4.16
Total weight engine ÷ cylinder hp.	129.7
Total weight engine ÷ boiler hp.	135.5
Total weight engine ÷ comb. heat. surface	71.0
Boiler proportions:	
Boiler hp. ÷ cylinder hp., per cent	95.7
Comb. heat. surface ÷ cylinder hp.	1.83
Tractive force ÷ comb. heat. surface	12.31
Tractive force × dia. drivers ÷ comb. heat. surface	775
Cylinder hp. ÷ grate area	38.1

Cab and Piping

The cab is of the railway company's standard short vestibule type and has many unique features. This type of cab makes it possible to have almost all the short stays in the sides of the firebox out clear of the cab. The few that remain inside are of the F. B. C. flexible type. The cab is securely riveted to the boiler with a 3-in. by 4-in. angle iron around the whole front of the cab and on the boiler and, in order to take care of expansion the cab brackets are provided with a groove making it possible for the cab to slide on the cradle casting.

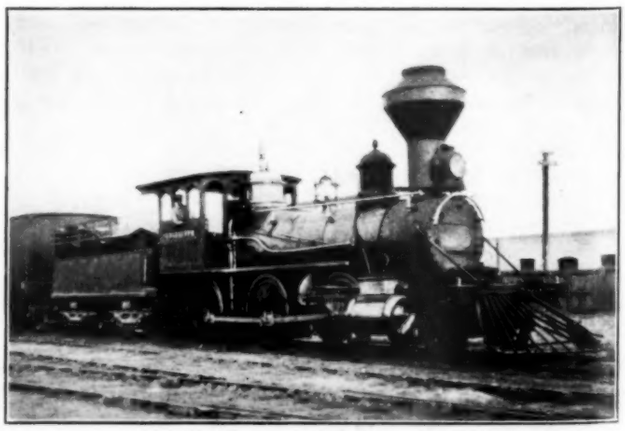
The cast steel turret with eight outlets has been placed outside far enough ahead of the cab to permit of grinding in or packing the operating valves which are all of one standard size entering the turret horizontally from the rear with the valve seats at the front of the turret. These operating valves are fitted with extension handles carried into the cab and labeled. Not only has the turret been placed outside the cab, but the inspirator, the blower valve and the stoker engine valve as well. Wherever a valve is outside of the cab and under the jacket, a slide has been provided in the jacket directly over the valve so that it is easily accessible.

Other Features

The tank is of the water-bottom type of Canadian National standard design and construction, somewhat modified for the application of the Duplex mechanical stoker. The tank has a water capacity of 8,300 Imperial gallons (10,000 U. S. gallons) and a coal capacity of 12 tons. The tender frame is of the Commonwealth cast steel type. The tender trucks are of the 4-wheel pedestal type equipped with 34¼ in. wheels with semi-steel centers 28 in. in diameter and 6-in. by 11-in. journals, all parts being interchangeable with trucks on previous Mikado locomotives.

The sand box is fitted with Hanlon sanders; World type safety valves are used, three in number, one muffled and two plain. The headlight equipment is made up of a Pyle-National type K-2 turbo generator set and Keystone type No. 1412 cage, fitted with a 14-in. Golden Glow reflector, C. M. S. focusing device and Canadian National standard separate number lamp case with sides oblique, this making for the maximum safety in operation by reason of the easier and more certain identification of locomotive numbers. Water level indication is procured by a Canadian National standard water column welded directly to the back head of the boiler and fitted with the railway company's standard try cocks and water glass fittings. The water glass is fitted with a special guard. The steam heat reducing valve is of the World-Leslie type and the piston and valve rod packing is King metallic. Franklin radial buffer and Unit safety bar are used between the engine and tender, and the piping between the engine and tender is equipped with Barco joints. These engines are fitted with Shoemaker firedoors.

The accompanying data table is for the locomotives to which a booster was not applied. The addition of the booster brought the total weight of the engine up to 322,450 lb. and increased the total tractive force to 65,000 lb.



Built by the Rogers Locomotive Works in 1854. Still in Service on the Pisco-Ica Railway, Peru

First Report of Transportation Institute

Railways Show Increase in Production Far in Excess of Capital and Labor Increase

THE FIRST REPORT of the Research Council of the National Transportation Institute on the place of railway transportation in our industrial structure was issued on January 21. This report presents the results of an investigation of the relative productivity of agriculture, manufacturing, mining and the railroads. It also presents an analysis of the output of these industries during the 20 years from 1900 to 1920.

The output of manufactures and mining per capita in the United States is 60 per cent greater today than it was in 1900, according to the findings of the Research Council. The manufacturing and mining industries together produced approximately 230 per cent of the output which they produced in 1900 and this gain has been accompanied by an increase of only 20 per cent in population.

"It is apparent," reads the report, "that the growth of manufacturing and mining is the outstanding development in our basic industries. In both, the output has increased even more rapidly than the number of workers."

The report of the Research Council, of which the Hon. Edgar E. Clark, former chairman of the Interstate Commerce Commission, is chairman, reads in part as follows:

Increase in Productive Output

There are 140 people living in the United States now for every 100 then; there are more than 140 people 10 years of age, or over, engaged in gainful occupations now for every 100 so engaged then. They produce almost 140 units of agricultural products, measured in bushels, pounds, gallons and dozens; and they bring forth 230 units of manufactured goods and of mining products for every 100 then.

The increase in productive output in our three major industries, agriculture, manufactures and mines, has brought with it a growth in transportation which was even greater than the increase in production of physical goods. For every one hundred tons of freight transported in 1900, we transported 234 in 1920. And where each ton had been transported 242 miles on the average in 1900, it was transported 304 miles in 1920, an increase of 25 per cent. Because of this greater distance, the revenue tons transported one mile were 292 per cent of those carried two decades earlier. The passengers carried one mile increased in the same ratio. The volume of transportation service rendered has, therefore, surpassed the growth of production in the other industries.

Despite some disparity in the growth of output in the different industries, the increases differ in only moderate degree. This increase in output has not been accomplished without an increase in the capital employed. Capital, from the standpoint of productive industry, consists of produced goods, devoted to further production. It is impossible to get an exact measure of the physical plant employed in a given industry. For manufacturing, the best measure of capital in that sense is the primary horsepower used in manufacturing establishments. This grew more rapidly than did the number of persons engaged in the industry. In 1899 the primary horsepower used in all manufacturing establishments was 10,097,893. In 1919 it had grown to 29,504,972. It stood, therefore, at a little over 290 in the latter year as against 100 in the former. On this basis the amount of capital per person employed was 40 per cent greater than it had been 20 years earlier. In 1909 the primary horsepower stood at 18,675,376, and in 1914 at 22,437,072. The five years from the latter date until 1919 saw an increase of over 7,000,000 in the primary horsepower.

Increase in Capital

The increase in the capital of manufactures, expressed in dollars, was, during this period of rising prices, more rapid than the growth in horsepower. Money capital grew as follows:

1899	$8,975,256,496
1909	18,428,269,706
1919	44,466,593,771

The capital in 1919 was, therefore, 495 per cent of the amount represented by the industry 20 years earlier. Since the output of manufactures was only 228 per cent of what it had been, the money capital per unit of output in 1919 was 213 as against 100 in 1899.

In the case of railroads the capital employed can be more easily stated in physical terms. Miles of road owned and miles of track operated are available annually since 1902. The same is true of the number and tractive power of locomotives, and of the cars in service and the carrying capacity of those cars. While all these facilities have increased, there is a disparity in the growth of the various items. The miles of track operated have increased from 259,784 miles to 406,580, or from 100 per cent to 157 per cent. In 1902 the tractive power of all locomotives was 844,494,125 lb.; while in 1920 it was 2,507,075,830. It had increased from 100 per cent to 297 per cent. Tractive power was, therefore, almost exactly three times as large in 1920 as it had been in 1902 when the figures are first available. During this same period the revenue tons carried one mile had increased from 100 per cent to 263 per cent. The revenue tons moved one mile per unit of tractive power in 1920 were, therefore, only 90 per cent of what they had been 18 years earlier. The number of revenue tons moved one mile per mile of track was 190 per cent of what it had been in 1902. The other items which go to make up the physical equipment of the railroads with which this service was rendered also increased less rapidly than tractive power. The carrying capacity of freight cars was only 233 per cent of what it had been 20 years earlier. The first track and other main tracks operated were 144 per cent, and the yard tracks and sidings were 210 per cent. Miles of road owned were 131 per cent.

The money capital as shown by the accounts of the railroads had likewise increased less rapidly than the tractive power of the locomotives and much less rapidly than the money capital of manufacturing establishments. In 1900 the invested capital of the railroads stood at $10,263,313,400, and in 1920 it stood at $19,839,276,119. This was 193 per cent of their capital 20 years earlier.

In mining, the increase in primary horsepower was from 2,867,562 in 1902, when the census of mining nearest to 1900 was taken, to 6,723,786 in 1919. This is 234 per cent of the former year. The horsepower per person in the industry was 38 per cent greater than it had been in 1902. In mining, therefore, the output increased about as rapidly as the horsepower used. In manufactures, however, it still lagged behind. There the output per unit of horsepower used fell off 20 per cent.

The table above shows the money capital of our four

	1900	1920	Increase 1900-1920	Per Cent 1920-1900
Agriculture, value of all farm property	$20,439,901,164	$77,924,100,338	$57,484,199,174	381
*Manufacturing	8,975,256,496	44,446,593,771	35,471,337,275	495
*Mines	2,300,000,000	6,955,466,831	4,655,466,831	302
Railroads	10,263,313,400	19,839,276,119	9,575,962,719	193

*Figures are for 1899 and 1919.

basic industries for 1900 and 1920, or the data for the nearest year available.

A comparison of this table with the last preceding one shows that capital has increased more rapidly than the number of workers of productive output in every industry except railroads. For convenience, the relative growth of persons employed, capital investment, and physical output from 1900 to 1920 is summarized below. The figures in the following table are all based on 1900 as 100 per cent.

	Persons engaged	Capital	Output
Agriculture	104	313	138
Manufacturing	208	495	228
Mines	170	302	231
Railroads	199	194	234* 292**

*Tons originating.
**Revenue tons one mile.

It is clear from this table that the increase of capital per unit of output differs widely in these industries. In the case of manufactures the capital involved in producing a unit of output in 1920 was $2.13 as against $1 in 1900. In the case of railroads the invested capital per ton originating and transported was $.83 as against $1 twenty years earlier. Per revenue ton mile it was $.66 as against $1 in 1900. In agriculture the corresponding figure of invested capital per unit of output was $2.77 as against $1 in 1900, while in mining it was $1.31.

It appears from these figures that the increase in output per unit of capital invested has been greater in railroads than in any other of the principal industries shown above. The results of the analysis of figures for workers, capital invested, and output, when put in common sense language, show that one worker in agriculture, using three and eight-tenths times as much capital, brought forth one and a third times the product of 1900. In manufactures one worker, using two and four-tenths times the capital, brought forth one and one-tenth times the product. In mining, each worker using one and three-fourths times the capital, brought forth a little more than one and a third units of products. In railroads, each worker using slightly less capital than 20 years before transported 18 per cent more tons of freight; and carried each one of those 60 miles, or 25 per cent farther. Each worker, therefore, carried almost one and one-half times as many tons one mile as 20 years ago.

Senate Committee Favors Investigation of Publicity

WASHINGTON, D. C.

THE SENATE COMMITTEE on interstate commerce began its consideration of the various railroad bills before it at a meeting on Monday and decided to spend a little time studying statistics before attempting to take action on any of the bills to reduce rates or repeal or amend the transportation act. Meanwhile, by way of keeping conversation on the subject alive the committee voted to report favorably, with some minor amendments, the resolution introduced by Senator Gooding of Idaho directing the Interstate Commerce Commission to investigate the publicity activities of the railroads. The resolution directs the commission to obtain within 60 days detailed information regarding the efforts of the railroads to "create public sentiment favorable to the railroad interests," although it says nothing about the anti-railroad propaganda which has made it necessary for the railroads to try to tell the public something about their side of the case, and also regarding "literature for the purpose of molding public opinion on any legislative matter other than railroads." This may refer to statements made in Congress that certain railroads have by publicity and through their agents endeavored to persuade citizens to write to their Congressmen in favor of the Mellon tax plan.

The Senate committee also decided to hold a short hearing beginning on February 4 on a bill introduced by Senator Gooding to amend the fourth section of the commerce act. Senator La Follette gave notice that he would press for early consideration of his resolution directing the Interstate Commerce Commission to reduce freight rates on agricultural products. Chairman Smith of the committee has asked the Interstate Commerce Commission to furnish the committee with a mass of detailed statistical information as to the experience of the railroads under the transportation act and he urged that members of the committee familiarize themselves with this information preparatory to taking up the bills before the committee.

Senator Trammell of Florida has submitted to the Senate a resolution, S. J. Res. 125, directing the committee on interstate commerce to investigate "the present high freight and express rates being charged" for the transportation of citrus and other fruits, vegetables and other perishable farm products, with a view to bringing about early action that will result in a substantial reduction in the existing freight and express rates which represent an increase of approximately 60 per cent over pre-war rates and "are so excessive as to greatly hamper the fruit and vegetable growers."

Senator Cummins has introduced six proposed amendments to the interstate commerce act and the safety appliance acts, S. 2054, 2055, 2056, 2057, 2058 and 2059, most of which were introduced at the last session of Congress but not acted upon. A new bill would extend the time within which shippers may file overcharge claims, another is intended to protect interstate commerce against bribery and other corrupt trade practices, another provides that the act to regulate commerce shall not apply to the territory of Hawaii. A similar bill has been introduced by the delegate from Hawaii and a number of bills have been introduced to amend paragraph 3 of section 16 of the interstate commerce act to extend the time for filing overcharge claims.

Representative Morrow has introduced (by request) a bill, H. R. 5718, to repeal sections 18, 19, 20 and 22 of the transportation act.

Representative Hoch of Kansas has introduced as H. J. Res. 141, a modified form of the resolution he had introduced earlier directing the Interstate Commerce Commission to take action relative to adjustments in the rate structure. The new resolution, which was drafted after he had visited the Interstate Commerce Commission and learned something about the various investigations of this kind which it already has under way provides that the investigation which the commission would be directed to make "shall be conducted with due regard to other investigations or proceedings affecting rate adjustments which may be pending before the commission." It also directs the commission to make, "in accordance with the law," such changes, adjustments and redistributions of rates and charges as may be necessary to correct any defects found to exist and provides that in making such changes the commission shall give due regard, among other factors, to the general and comparative levels in market value of the various kinds and classes of commodities as indicated over a reasonable period of years, to a natural and proper development of the country as a whole, and to the maintenance of an adequate system of transportation.

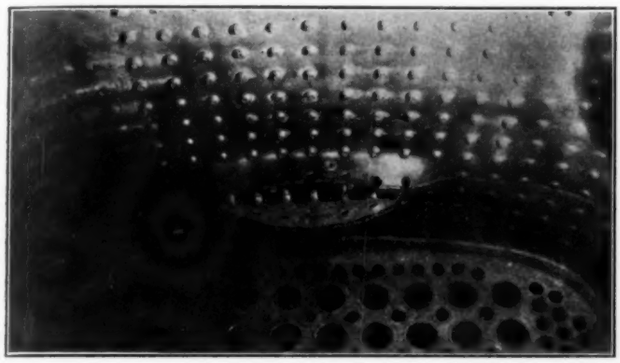
Senator Cummins, who had expected to introduce his consolidation bill last week, has been somewhat delayed but was expected to get it in before the end of this week. As he has previously indicated the bill proposes many changes in the present law, providing for a period of two years in which voluntary consolidations may be effected if approved by the Interstate Commerce Commission and a period of five years in which committees appointed by the commission would attempt to expedite the consolidations recommended in the commission's plan by assisting in the negotiation of the practical details, and for some form of compulsion for consolidations not completed after seven years.

Bureau of Locomotive Inspection Report

Increase in Defects and Accidents as Compared with Excellent Showing of Preceding Year

THE TWELFTH ANNUAL REPORT to the Interstate Commerce Commission by A. G. Pack, chief inspector of the Bureau of Locomotive Inspection, for the fiscal year ending June 30, 1923, shows a marked increase in the number of defects and accidents due to the abnormal prevailing conditions. An abstract of the report follows:

The percentage of locomotives found defective increased from 48 per cent during the preceding year to 65 per cent, and the total number of defects increased approximately 70 per cent. The deteriorated condition of motive power is sharply reflected in the increased number of accidents and casualties. A comparison of accidents and casualties during the year as compared with the preceding year shows an increase of 117 per cent in the number of accidents, 118 per cent in the number killed, and 120 per cent in the number injured.



Low Water Caused Autogenous Weld to Open Up for 36 in.

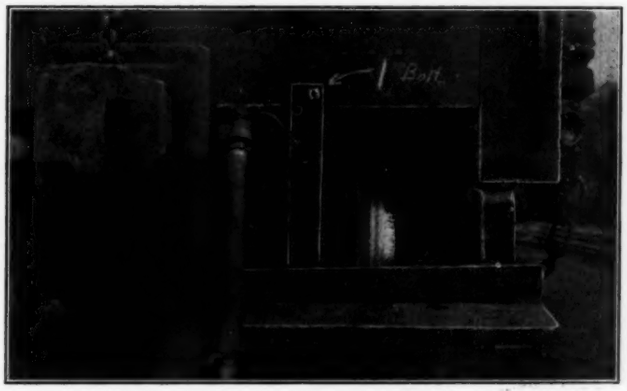
Back End of Boiler After Crown Sheet Failure

Records covering locomotive failures indicate that the number of locomotive miles per locomotive failure decreased as much as from 50 to 70 per cent during the year as compared with the preceding year. Every locomotive failure caused by physical defects carries with it potential injury to persons, serious delay to traffic, and heavy property damage.

During the year there were 57 boiler explosions which resulted in the death of 41 persons and the serious injury of 88 others, an increase of 75 per cent in the number of such explosions, 86 per cent in the number of persons killed, and 93 per cent in the number injured, as compared with the preceding year. While most of these explosions were caused by the crown sheet having become overheated due to low water, the number of such cases where contributory defects or causes were found increased approximately 135 per cent as compared with the preceding year. The contributory causes found early establish the necessity for proper inspection and repair of all parts and appliances of the locomotive and tender.

Overheated Crown Sheet Pulled Away from 238 Radial Stays and Pocketed 17½ in. Without Other Material Damage

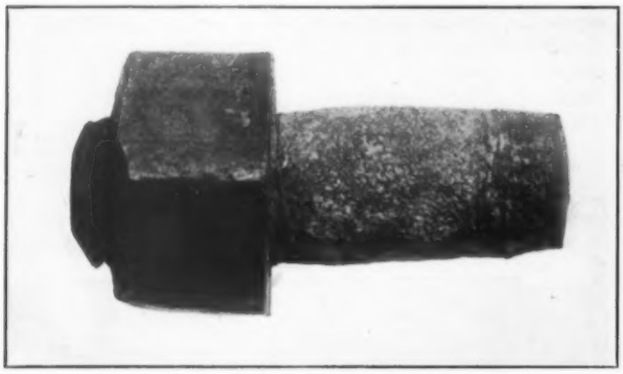
During the year numerous accidents were investigated where welds made by the fusion or autogenous process were involved. The investigations fully support the position previously taken that this process has not reached a state of development where it can safely be depended upon in boiler construction and repair where the strain to which the structure is subjected is not carried by other construction, nor in firebox crown sheet seams where overheating and failure are liable to occur, or on any part of the locomotive or tender subject to shock or strain where, through failure, accident and injury might result.



Dangerous Condition of Footboard Fastenings on Tender of Switch Engine

Numerous accidents have occurred due to the failure of

autogenously welded seams and cracks in the boiler back head. One fatal accident of this nature occurred where an autogenously welded crack 21½ in. long in the boiler back head failed while the locomotive was hauling a passenger train, resulting in death to the engineer and the serious injury of the fireman. The scalding water and steam escaping through the rupture compelled the engineer to leave the cab without being able to close the throttle or apply the brakes in the usual way. The engineer and fireman climbed out of and



Stud Blown from Boiler Back Head

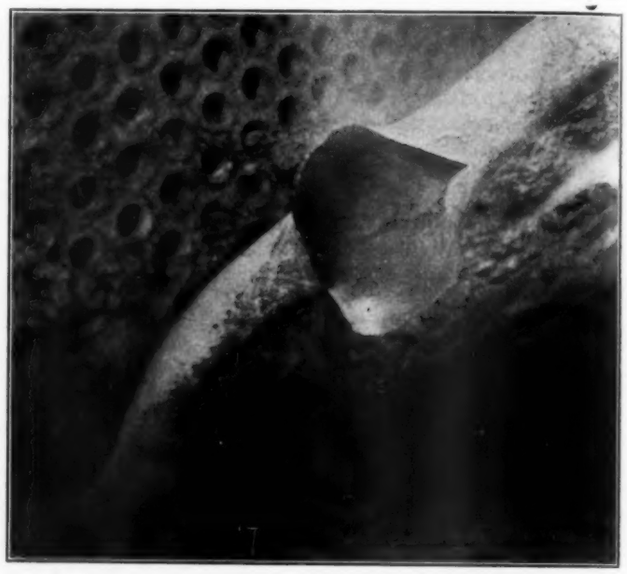
around the left side of the cab to the running board and to the front end of the locomotive, where the angle cock was opened and the brakes applied.

Accidents caused by defective grate-shaking apparatus increased from 48 during the preceding year to 138 during the present year, an increase of 187 per cent. The major portion of these accidents were caused by the shaker bar not having a proper fit on the fulcrum lever. Since it is impossible to

Crude Methods of Repairing Broken Staybolts

avoid the changing of shaker bars from one locomotive to another, each carrier should adopt a standard whereby shaker bars are made interchangeable with a proper fit on the fulcrum levers.

Accidents due to the failure of injector steam pipes increased from nine during the preceding year to 40 during the year. A majority of these accidents were due to the injector steam pipe pulling out of the brazing collar due to defective workmanship and to breakage caused by weak, light construction and to defective material. In many instances the failure of injector steam pipes was contributed to by the injector not being properly fastened so as to relieve the steam

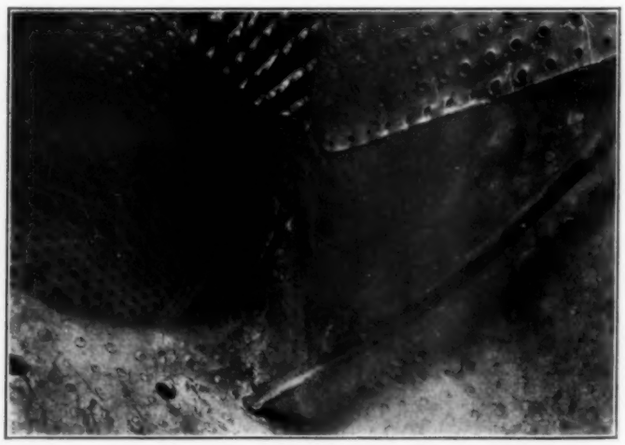


Arch Tube Rupture Caused by Overheating

pipe from the weight and vibration of the injector and its connections.

Accidents which reflect the general condition of driving gear, running gear, etc., increased materially. For instance, main and side rod accidents increased from 23 to 53; valve-gear accidents increased from 18 to 59; and accidents due to failure of reversing gear increased from 53 to 100.

During the year 230 applications were filed for extension



Another Low Water Crown Sheet Failure

of time for removal of flues. Investigation disclosed that in 34 cases the condition of the locomotives was such that no extension could be granted. Fourteen were in such condition that the full extension requested could not be authorized, but an extension for a shorter period was allowed. Fourteen extensions were granted after defects disclosed had been repaired. Thirty applications were withdrawn and the remaining 138 were granted.

There were filed 5,076 specification cards and 11,187 alteration reports necessary in determining the safe working pressure and other required data for the boilers represented.

These cards and reports were analyzed and corrective measures taken with respect to numerous discrepancies which were found. It was required that many older and weak boilers be reinforced or the working pressure reduced.

In two instances appeals were taken from the decision of

Assortment of Non-Interchangeable Grate Shaker Bars Found at One Small Terminal

inspectors and after careful consideration of existing conditions the appeals were partially sustained and partially dismissed. The decisions of these inspectors were technically in error, but practically correct.

The recommendations for betterment of service made at the

Ice from Stoker Engine Drip Pipe Discharging Near Top of Tender Steps Caused This

close of the report were the same as last year. The following is a brief summary of these recommendations:

That the act of February 17, 1911, be amended to provide for not less than 50 additional inspectors and increased compensation adequate to carry out the purpose of the law;

That all coal-burning locomotives have mechanically operated fire doors so constructed that they may be operated by pressure of the foot on a pedal or other suitable device;

That a power reverse gear be applied to all locomotives;

LOCOMOTIVES INSPECTED AND DEFECTS FOUND

	1923	1922	1921	1920
Locomotives reported	70,242	70,070	70,475	69,910
Locomotives inspected	63,657	64,354	60,812	49,471
Locomotives defective	41,150	30,978	30,207	25,529
Percentage inspected found defective	65	48	50	52
Locomotives ordered out of service	7,075	3,089	3,914	3,774

ACCIDENTS CAUSED BY THE FAILURE OF SOME PART OR APPURTENANCE OF THE BOILER

	1923	1922	1921	1920
Number of accidents	509	273	342	439
Number killed	47	25	51	48
Number injured	594	318	379	503

ACCIDENTS CAUSED BY THE FAILURE OF SOME PART OR APPURTENANCE OF THE LOCOMOTIVE AND TENDER, INCLUDING THE BOILER

	1923	1922	1921	1920
Number of accidents	1,348	622	735	843
Number killed	72	33	64	66
Number injured	1,560	709	800	916

PERSONS KILLED AND INJURED, CLASSIFIED ACCORDING TO OCCUPATIONS

	1923		1922		1921		1920	
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured
Members of train crews:								
Engineers	19	484	11	213	15	237	16	272
Firemen	16	597	10	277	25	360	20	404
Brakemen	12	137	7	66	13	64	9	77
Conductors	1	35	..	25	2	20	2	19
Switchmen	2	32	1	13	3	15	4	19
Roundhouse and shop employees:								
Boiler makers	3	19	1	10	1	7	2	9
Machinists	2	14	..	9	1	3	1	20
Foremen	1	6	..	1	1	3	..	3
Inspectors	..	2	..	2	..	5	..	1
Watchmen	1	6	..	3	..	4	4	3
Boiler washers	1	9	..	1	..	7	..	13
Hostlers	..	31	..	10	..	8	..	13
Other round house and shop employees	4	29	1	15	1	25	3	30
Other employees	4	36	2	23	2	16	4	26
Non-employees	6	123	..	41	..	21	1	7
Total	72	1,560	33	709	64	800	66	916

DERAILMENTS AND ACCIDENTS DUE TO DEFECTS IN OR FAILURE OF SOME PART OF THE LOCOMOTIVE OR TENDER

	1923	1922	1921	1920
Number of derailments*	38	22	8	7
Number killed	4	5	..	7
Number injured	157	61	30	18

*Only derailments reported by carriers as being caused by defect in or failure of parts of the locomotive or tender were investigated or counted.

That all locomotives be provided with an automatic, power-operated bell ringer;

That the cab of all locomotives not equipped with front doors or windows of such size as to permit of easy exit, have

Locomotive Was Still in Service, Although Gage Glass Connection Was Practically Closed by Scale

a suitable stirrup or other step and a horizontal handle on each side approximately the full length of the cab;

That all locomotives where there is a difference between the readings of the gage cocks and water glass of 2 in. or more under any condition of service, be equipped with a suitable water column, to which shall be attached three gage

cocks and one water glass, also one water glass with not less than 6 in. clear reading on the left side or back head of the boiler.

I. C. C. Mileage Book Order Nullified

WASHINGTON, D. C.

ONLY 11 DAYS after the argument in the case the United States Supreme Court on January 21 rendered a decision sustaining that of the federal court for the district of Massachusetts which had enjoined the enforcement of the Interstate Commerce Commission's order of March 6, 1923, directing the railroads to issue interchangeable mileage books containing $90 worth of coupons for $72. The opinion by Justice Holmes finds that the commission erred in attempting to comply with what it deemed to be the wish of Congress that the mileage be sold at a reduced rate, after Congress had itself failed to state what rate it wished to have used but had directed the commission to fix just and reasonable rates. The impression that Congress really desired to please the commercial travellers who had clamored for reduced mileage rates, although it had actually refrained from ordering a reduction, Justice Holmes characterizes as a "mirage" and he intimates that the commission, as well as the commercial travellers, were misled by this mirage when it should have acted on its own judgment as to what would be a just and reasonable rate. In delivering the opinion of the court, Mr. Justice Holmes said:

"This is a bill in equity brought by railroad companies to prevent the enforcement of an order of the Interstate Commerce Commission dated March 6, 1923, following reports of January 26 and March 6, 1923; 77 I. C. C. 200. Ibid. 647. The order purports to be made in pursuance of the act of August 18, 1922, c. 280; 42 Stat. 827. This act amended section 22 of the interstate commerce act by adding to Par. 1 what became two paragraphs, viz: (2) directing the commission to require the railroads subject to the act, with such exemptions as the commission holds justified, to issue interchangeable mileage scrip coupon tickets at just and reasonable rates, in such denominations as the commission may prescribe, with regulations as to use and prescribing whether the tickets are transferable or not transferable and if the latter what identification may be required, and what baggage privileges go with such tickets; (3) making it a misdemeanor for any carrier to refuse to issue or accept such tickets as required or to conform to the commission's rules, or for any person wilfully to offer for sale or carriage any such tickets contrary to such rules. After a hearing the commission ordered the railroads specified, being all the railroads having annual operating revenues in excess of $1,000,000 and known as Class I, to issue, at designated offices, a non-transferable interchangeable scrip coupon ticket in the denomination of $90, which shall be sold at a reduction of 20 per cent from the face value of the ticket.

The bill alleges that the amendment of 1922 as construed by the commission is contrary to the fifth amendment and to the commerce clause, Art. 1, section 8, of the Constitution, but that, properly construed, it does not authorize the order made. The order is alleged to apply to intrastate carriage and also to be inconsistent with section 2 of the interstate commerce act which requires like charges for like service in similar circumstances; with section 3 forbidding unreasonable preferences; with section 15a providing for the establishing of rates for rate groups that will earn a fair return upon the aggregate value of the property used in transportation; (see Increased Rates, 1920, cited as Ex Parte 74, 58 I. C. C., 250; Reduced Rates, 1922, 68 I. C. C., 676;) and with sections 1 and 22 requiring the commission to establish just and reasonable fares. These averments are developed in detail, but we do not dwell upon them because the decision below and our own turn upon a different point. It is further alleged in the bill that the conclusion stated by the commission that the reduced rates established by it for scrip coupon tickets will be just and reasonable for that class of travel is contrary to the specific facts found by the commission, and is not to be taken as an independent finding of fact, but only as a conclusion or ruling reached by it upon a misinterpretation of the law. This was the view taken by the three judges who sat in the district court. They held that the commission considered that the amendment of 1922 either required it to make a reduction or at least showed a spirit and purpose that should be deferred to, and on that ground came to a result that otherwise would not have been reached. They held that therefore the order could not stand, considering that the amendment of 1922 like the rest of the interstate commerce act called for an unbiased opinion upon the merits of the case. They issued a perpetual injunction and the defendants appealed. 288 Fed. Rep. 951.

"We are of opinion that the interpretation of the statute in the court below was right. There is no doubt that the bill owed its origin to a movement on the part of traveling salesmen and others to obtain interchangeable mileage or scrip coupon books at reduced rates. The bill that was passed originally fixed reduced rates, but it was amended to its present form undoubtedly because the prevailing opinion was that the rates should be determined in the usual way by the usual body. The object of the traveling salesmen was defeated in so far as Congress declined to take any step beyond authorizing the issue of scrip tickets. Coming as it did from the agitation for this form of reduced fares, the statute naturally enough carried with it more or less mirage of fulfilling the hope that gave it rise, but in fact it required a determination of what was just and reasonable exactly as in any other case arising under the interstate commerce act. The original purpose of the amendment as introduced retained headway enough to require the issue of scrip, but there the purpose was stopped, and, as not infrequently happens in legislation, the matter was left otherwise where it was before. Apart from constitutional difficulties, Lake Shore & Michigan Southern Ry. Co. vs. Smith, 173 U. S. 684, the whole tendency of the law has been adverse to the enactment as proposed, at least unless a clear case should be made out.

"The commission in its report pointed out that the net railway operating income for the seven months ending July 31, 1922, was below the return fixed as reasonable, discarded the supposed analogy between the carload rate and the interchangeable scrip or mileage ticket, intimated that the supposed benefit that the carrier might get from the advance use of the money would be more than offset by the increased expenses, and said that the question whether the scrip ticket would stimulate travel sufficiently to meet any loss that might result must remain a matter of speculation until an experiment was made. After thus excluding the grounds upon which the order could be justified the commission held that the obvious spirit and apparent purpose of the law required that the experiment should be tried, and on these premises declared that the rates resulting from the reduction of 20 per cent would be 'just and reasonable for this class of travel.' It seems to us plain that the commission was not prepared to make its order on independent grounds apart from the deference naturally paid to the supposed wishes of Congress. But we think that it erred in reading the wishes that originated the statute as an effective term of the statute that was passed, and therefore that the present order cannot stand."

Bad Weather Reduces Cross Tie Production

Reports from Field Indicate Decrease from 1923 Output—Marked Changes Evident in Methods

View of Tie Yard at Grand Cane, La., Where Six Companies Are Buying Ties. Typical of Conditions at Competitive Points

THE TRANSITION that is now going on in the tie producing industry and the improvement in the character of ties resulting therefrom were evident from the discussion at the sixth annual convention of the National Association of Railroad Tie Producers at Kansas City, Mo., on January 17-18. This organization includes in its membership 51 companies engaged in the production of cross ties for railway use. Its program included reports of conditions in the tie producing areas and papers on problems affecting the production of ties. L. W. Baldwin, president of the Missouri-Pacific, spoke on "The Railroad Problem and the Tie Industry" at a luncheon on the second day of the meeting.

In calling the sessions to order Timmons Harmount, of the Harmount Tie & Lumber Company, Chillicothe, Ohio, president of the association, described the campaign which the association has launched to promote the uniform buying of ties by the railroads and the stabilization in volume of production and in prices which will result therefrom. He also referred to the attacks which are being made on the railways in Congress and elsewhere and urged the members of the association not only to go on record collectively in favor of the more extended trial of the present Transportation Act, but also to use their influence individually in counteracting hostile legislation by personal appeals to their representatives in Congress.

Reports which were presented indicate that the production of ties in most areas will be approximately equal to that of 1923, but that considerable difficulty is being experienced in getting these ties out of the woods, owing to the bad condition of the roads as a result of the unusually heavy rains during the fall. In the South the production declined sharply last fall as a result of the decrease in demand and has not increased until recently. In the Minnesota-Wisconsin territory, on the other hand, the production of hardwood ties was unusually large last fall, but the lack of snow has delayed their transportation from the woods.

Recent Developments in the Tie Industry

Dr. Hermann von Schrenk, consulting timber engineer, St. Louis, Mo., described the developments which have taken place in the tie industry during the last twenty years. He characterized the most important of these developments as the change in specifications. Twenty years ago few dimensions other than length were specified. The first table of tie sizes was not issued by the American Railway Engineering Association until 1905. Prior to federal control the roads commonly specified only two grades, the No. 1 or better grade being encouraged and the No. 2 discouraged by depressing prices. The preparation of the United States Railroad Administration specifications opened a new era. Dr. von Schrenk stated that the standardization of ties according to their sizes and groups was an important development which has come to stay and that while some roads have not adopted these grades in their entirety in general they are recognized as satisfactory.

Marked changes have also occurred in the manufacture of ties. Not many years ago practically all of the ties produced were hewn largely at odd times. The first sawed ties appeared about 1900, since which time the proportion has increased steadily. The points of production have also changed. Right-of-way production formerly prevailed, whereas the length of haul from point of production to point of use now averages approximately 700 miles and the transportation cost frequently equals that of production. With the depletion of the most satisfactory supplies of timber, the kinds of trees from which ties are cut has also undergone a change. White oak was formerly used almost universally, whereas a vast variety of timbers are now employed, particularly following the development of the science of timber treatment.

With increased knowledge regarding timbers, there has developed a great change in the methods of handling ties. The oaks which were formerly used in large quantities do not suffer greatly from careless handling and such damage as occurred was not evident. With the use of other woods, the necessity for increased attention has become more evident. Sap rot was not recognized until recent years; neither was the necessity of seasoning ties under proper conditions realized until lately.

In conclusion, Dr. von Schrenk emphasized the importance of reforestation. He referred to the failure which has characterized the attempts to import ties from South America and other foreign countries and expressed his opinion that the United States must prepare to supply its own requirements indefinitely.

The Railroad Problem

An important feature of the convention was a luncheon meeting at which L. W. Baldwin, president of the Missouri-Pacific, spoke on the Railroad Problem and the Tie Industry, in part as follows:

I feel that we can face the future with confidence and a degree of optimism justified by conditions generally throughout the country. As far as the railroads are concerned, there is no question but that they are functioning better than they were a year ago. We have recently enjoyed a splendid increase in the volume of business and we have been able also to accept more business than was offered and to handle it with satisfaction to shippers. You know of the increased expenditures for equipment, supplies and facilities. And you know, of course, how those increased expenditures have resulted in a wave of prosperity that touched almost every industry in America.

Even agriculture is more prosperous than the politicians would have us believe. Recent official reports issued by the U. S. Department of Agriculture show that 11 principal staples have risen in value from about five billion, three hundred million dollars two years ago to about seven billion dollars in 1923. From the same source, we learn that the farm value of agricultural crops on December 1, 1923, was over eight hundred million dollars more than on December 1, 1922.

It is true, without doubt, that some individuals and some

sections have suffered. But while the value of the wheat crop was diminishing, the value of the corn crop was increasing. There are sections in the South where the ravages of the boll weevil and the army worm made great inroads on the income of Southern farmers. But the total value of the cotton crop is greater and as a result, the South as a whole is more prosperous.

In spite of these facts, the most menacing cloud on the horizon is the treat of certain self-appointed champions of the farmers' cause to penalize the railroads for the fancied ills of agriculture. There has been continued agitation for lower freight rates on farm products. The theory of the agitators is that lower rates will help to restore the purchasing power of the farmer. If that were true, something ought to be done about it. But it is not true. I question if lower freight rates would be able to help any farmer or any group or any section. The market price of farm products is not dependent to any extent upon transportation costs. The market values are determined by the law of supply and demand and the demand is dependent upon the purchasing power of the consuming public.

Agricultural products are necessities. People must have food and clothing. But the quantity and the quality purchased by the ultimate consumer will be in direct ratio to the condition of the consumer's pocketbook. If the country is prosperous there will be a market for the raw materials produced on the farms. However, the market never will absorb a great surplus of any particular crop. Witness what happened in the last six months in the case of the corn crop and the wheat crop. During that period the aggregate value of the corn crop increased approximately three hundred million dollars. During the same period, the total value of the wheat crop decreased about one hundred and forty-seven million dollars. And there was no change whatever in the freight rates on either commodity during that period.

You will hear a lot about the valuation of the railroads and the effect that valuation will have on freight rates. You will hear antagonists of the railroads charging that rates are kept at a high level because of the necessity for earning returns on those valuations. I want you to know that such charges are made without any foundation in fact.

To begin with, the market value of railroad securities never has had any appreciable effect upon rates. In former days when, it is admitted, there were some abuses, especially in refinancing operations, the rates were not affected at all by such operations. The rate level remained approximately the same on those railroads that never were subjected to refinancing. Investors and security holders made and lost money on those operations and in some instances the quality of the service was affected but rates never were manipulated to conform to the values of outstanding securities.

For rate making purposes, the Interstate Commerce Commission accepted a tentative valuation of $18,900,000,000 as of December 31, 1919. This figure is based on the value of railroad properties used in the production of transportation service and it is based on costs and prices up to and prior to 1914. There is no war-time inflation in this figure which is largely arrived at as a result of ten years of investigation by government experts and the railroads.

One way to arrive at an understanding of the vast amount of capital tied up in the railway plant is to consider the various items separately. There are approximately 400,000 miles of railroad track in the United States. This includes, of course, main running tracks, second tracks, side tracks, yard tracks, passing tracks, etc. At only $25,000 a mile, the value of this track would be ten billion dollars. It goes without saying that this track could not be replaced at that price. The U. S. Department of Agriculture estimates that the average cost of a mile of improved highway today is $36,000 and such highway does not have any rails, ties, tunnels, trestles and comparatively few bridges. There are on our railroads today 69,000 locomotives. If we accept an average value of only $20,000 each for these, their value would be $1,380,000,000. Our 2,400,000 freight cars at only $1,000 each would be worth $2,400,000,000. Passenger train cars number a few more than 57,000. At only $10,000 each they would be worth $570,000,000. It is conceded without argument that materials and supplies that must be carried in stock by the railroads are worth conservatively about 500 million dollars and the amount of working capital necessarily required is an equal amount, or another billion dollars for these two items.

There are approximately 50,000 stations and terminals in America and the value of these, together with yards, signals, roundhouses, shops, machinery, water supply plants, power plants, elevators, docks, coal pits and other items easily total more than seven billion dollars. There are more than 1,000 cities and towns in America with railroad terminal plants that cost more than a million dollars each. This alone would account for another billion. The shops and shop facilities, employing more than 400,000 men constitute an enormous industry in themselves. It is extremely doubtful if these terminals, shops and other facilities could be duplicated today for ten billion dollars, but they are conservatively figured at only seven billion as I said. All these items which I have mentioned total more than twenty-two billion dollars.

The total par value of all outstanding railroad securities is less than this figure and the market value of these securities is only about half of that amount. It stands to reason then that any plan for arbitrarily declaring the fair valuation of the railways less than their actual worth is nothing more or less than confiscation.

There was a general 10 per cent reduction in freight rates in 1922, effective July 1 of that year. It is estimated by the Interstate Commerce Commission that this reduction lessened the revenues of the railroads about $500,000,000 during 1923. The principal result has been that many railroads, while transporting the largest volume of business in history, have failed to earn any profits. A further reduction, at this time, whether based on a downward revision of railway valuation or on any other pretext, would without doubt work unwarranted hardship on most railroads.

If that condition arises, the railroads will have only one course open to follow. They will be compelled to retrench in every possible way and it will then be impossible for them to keep pace with the progress of the country. That retrenchment will have a far-reaching effect in more ways than one. If the revenue of the railroads are further reduced they will necessarily have to curtail their purchases of railway materials, cars and locomotives. Smaller orders will result in many plants in allied industries going on part time or closing down. Men out of work purchase only the barest necessities and so the markets for manufactured articles would be seriously affected with the result that more and more men would be faced with the problem of unemployment. Those persons who profess to be trying to help the farmer and the country as a whole are, in fact, playing with dynamite that may wreck our entire economic machine.

I don't believe the great majority of sane, constructive citizens in this country will permit the antagonists of the railroads to do this thing to the country, especially if that majority of our citizenship is thoroughly informed. And that is where you gentlemen can be of material assistance. I hope each of you will resolve to do whatever you can to explain the situation.

As I said, with the exception of this danger, which ought not to exist, the outlook can be called fairly bright. The volume of railway traffic ought to continue at or near the high levels recorded in 1923. The railroads always are a good business barometer. When they are working at capacity, the country is prosperous. And, of course, when business is

good and there is plenty of it, the railroads will continue to buy new equipment, add new tracks, build needed new facilities and in various other ways contribute to the general prosperity.

We expect to be able to continue to provide you and other shippers with an entirely adequate and satisfactory service. And by doing that we feel that we will be contributing our fair share to normal development and progress. With adequate railroad transportation, all business benefits. The local merchant is enabled to do more business with a relatively smaller capital investment. With dependable freight service his turnover can be effected more easily. The same thing applies to the manufacturing industry. Factories can operate with smaller stocks of raw materials. Banks are helped because they are not required to carry long-term paper. With more liquid credits, they in turn can make more capital available for legitimate expansion and development. Farmers will be helped because with an adequate and dependable transportation service they will be enabled to take advantage of favorable markets and realize the utmost for the things they produce.

It is to be hoped that levels will strike a happier medium. You know and I know that while the whole freight rate level is approximately 46 per cent higher than it was in 1914, the cost of living probably is 50 per cent higher than that and the cost of producing transportation is considerably more than these percentages above the 1914 level. Personally, I do not believe the answer is to be found in pulling down to former levels those items which are relatively higher. Rather, I believe more prosperity will accrue to the country as a whole if we seek to raise those figures which are below the general level. This applies to all of us as well as to agriculture.

If men in public life—politicians, and others—really want to help the country I would like to suggest to them that they pay more attention to the question of reducing taxation and less attention to the matter of trying to legislate prosperity into the pockets of any particular class or group by taking something away from the railroads.

Ten years ago railroad dividends were about two and a half times as much in the aggregate as railroad taxes. The figures gradually approached each other, dividends dwindling and taxes increasing until in 1922 taxes paid by the railways exceeded the dividends paid by them by 11 per cent.

I am not one of those who believe that all regulation should be removed from the railroads. The railways are essentially public service institutions and as such they are subject to reasonable regulation. But too much regulation defeats the very purpose it is intended to serve. Multiplying regulation and supervision requires additional thousands of government employees and these must be paid out of public funds. These funds must be collected by the government in the form of taxes, either direct or indirect.

Production of Southern Pine Ties

By C. D. Christian

Standard Tie & Lumber Company, Meridian, Miss.

The term Southern yellow pine includes the several species of pine growing in the southern states from Virginia to Texas, among which are longleaf, loblolly, shortlead, slash and pond pine. In my section of the South (Mississippi), the shortleafed pines are common and popularly known as rosemary pine, forest pine, oldfield pine, loblolly pine and spruce pine.

All so-called Southern pine is yellow pine. While the several species of pine are easily recognized, they frequently blend so that a tree of one species will sometimes partake of the characteristics of other species. The writer has seen long leaf trees growing near oldfield pine that had some of the common characteristics of oldfield and yet retained the very long needle and large cone. The several shortlead pines are frequently so intergraded that experts will differ as to the kind of tree a specimen is.

What is true of the blending of the trees while growing is especially true of the timber from the trees, so the Southern Pine Association several years ago undertook to remedy this situation by dividing all Southern pine into two classes: (1) Dense Southern yellow pine and (2) sound Southern yellow pine, these terms being descriptive of quality and not of botanical species. The classification is as follows: "Dense yellow pine shall show on either end an average of at least six annual rings per inch and at least one-third summerwood, or else the greater number of rings shall show at least one-third summerwood, all as measured over the third, fourth and fifth inch from the pith. Wide ringed material excluded by this rule will be acceptable, provided the amount of summerwood as above measured shall be at least one-half. Sound Southern yellow pine shall include pieces of Southern pine without any ring or summerwood requirements." For the purpose of determining the density of the wood the point of measurement of the stick of timber is the third, fourth and fifth inch from the pith. It has been demonstrated by experiments that the summerwood is stronger than the springwood. Therefore, in selecting timber for strength, the summerwood content is the practical concern of the buyer and not the species of pine.

It is a question in my mind whether it is better for a road to buy dense pine ties or sound pine ties. I think it is true that in any quantity of Southern pine ties a large percentage will class dense, so that a road buying Southern pine ties without insisting on density, gets a large percentage of dense ties. The small percentage that will not grade dense could profitably be used in tracks where as much strength is not required. Many of the roads have bought pine ties for a number of years without regard to their density and must have obtained satisfactory results, as they continue to buy the same kind of ties.

When the difference in cost of the dense ties is considered and the waste of timber (for there are some ties in almost any stand of timber that will not satisfy the density rule) would it not be more practical to buy sound Southern pine ties? The percentage of ties that must be dense could be specified as is done in buying No. 2 and better lumber (where usually 65 per cent must be No. 1 common). If this kind of buying was practiced, the ties would be easier to obtain and could be bought much cheaper. The writer has observed that on every yard where dense ties are bought, a substantial number is left from each inspection that do not satisfy the density rule. After the ties are gone through no other road wants to send an inspector to go through them, so they have to be sold as rejects or left to rot. The result is the producer makes no money on this class of tie unless charging enough to take care of the percentage that he knows will be left.

Assuming that the engineering department has decided that dense pine is to be bought, how shall the proper density be determined? The term "longleaf" is frequently used where only dense is meant. But if longleaf is specified, a producer has to base his quotation on strictly longleaf. It is becoming more and more difficult to get real longleaf sap pine ties. All of the large acreage in longleaf timber is owned by mills and they would not think of making cross ties from this timber at the prices that are paid for ties. The writer ventures to say that few orders for sap pine ties have been entirely filled from longleaf timber in recent years and yet the purchasing departments are daily asking quotations on longleaf ties. If dense pine satisfies the same requirements as longleaf, would it not be better to specify dense Southern pine? The methods in practice for determining density are varied. Most roads employ the old United States Railroad Administration requirements for ties from needle leaf trees to the effect that there must be five annual rings to the inch and one-third summerwood or one-half summerwood in fewer rings.

One road uses the Southern Pine Association grading and makes the third inch from the pith the test. Other prominent roads follow the American Railway Engineering Association specifications to the effect that ties from needle leaved trees shall be of compact wood throughout the top fourth of the tie, where any inch of any radius from the pith shall have not less than one-third summerwood in six or more rings of annual growth, or not less than one-half summerwood in fewer rings.

In Southern pine the annual rings are usually fewer in the heartwood when heartwood is present in the tie. If the tie contains heart the pith of the tie is the center of the heart. The heartwood is of less compact wood than the sap wood In my section probably 98 per cent of the sap pine ties are rifled ties with possibly two per cent split. Heartwood is present in a large percentage of ties that are hewn from any pine except oldfield and spruce pine. The rings are fewer and further apart in the heart and are closer together as the outside of the tree is approached. In hewing or sawing the ties the closest rings are necessarily destroyed in slabs or juggles. Consider a log with a heart center four inches in diameter. In this heart center the annual rings are not close together. If we make a 7-in. by 9-in. tie from the cut we get enough rings to average five to the inch, where if we make a 6-in. by 8-in. tie from the same stick we hew off the closest rings and make a tie that will not satisfy the present density rule. Here is an example of one tie passing and the other being rejected, although made from the same cut. If we extend the same line of inquiry further we find that as we go up the tree, the rings get closer together and the heart gets smaller, so frequently a 7 in. by 9 in. tie made from the butt cut under the rule will be rejected and a grade 2 tie will be accepted from the same tree.

In order to remedy this condition, I make the following suggestions:

(1) Whenever possible make no density specification.

(2) If dense ties are required, specify dense and not longleaf.

Discussion

John Foley, forester, Pennsylvania System, called attention to the fact that the American Railway Association specifications for standard cross ties made no distinction between the several species of southern yellow pines. Adherence to that standard would relieve any railroad from making itself ridiculous by insisting on longleaf pine, which is rarely obtained exclusively, since the standard specifications provide that all ties are to be of compact wood unless coarse wood is specially ordered.

Mr. Foley also pointed out that the relative quantities of compact and coarse ties delivered depended on the locality of production, the quality of the site and the density of the stand. Where longleaf pine predominated, compact wood would be expected. Where the soil is poor, slow growth would provide compact wood in pines other than longleaf. So would dense stands of trees growing close together, while longleaf pines growing far apart would yield ties of coarse wood. Therefore, it does not follow that if the vicinity in which Mr. Christian operates provides a large proportion of compact ties, equal quantities are to be had from other localities.

As a matter of fact, the reverse is the case elsewhere and the railroads dependent on the territories in which southern pines grow rapidly, wisely refrain from distinguishing between compact and coarse wood. They are almost exclusively lines which find 6-in. by 8-in. ties satisfactory for their main tracks and it would not pay them to sort out the comparatively few ties of compact pine they obtain for use in places of especially heavy traffic. They have hardwood ties already separated available for such use.

While it is doubtless the case that the railroads ordering ties of compact pine only have side tracks in which coarse wood can be used, they are generally lines which import their ties from a considerable distance and cannot afford to pay freight on low grade material. They obtain chestnut and other ties locally along their lines for such purposes as ties of coarse pine could serve and they will not waste the money involved in sorting compact from coarse wood. That separating can be done most economically where the ties are manufactured and if the railroads now confining their consumption of southern pine ties to compact wood are to be converted to the use of some coarse wood, the appeal should be made through separate car loads of coarse ties which can be distributed where desired and through a lower price for such poorer ties.

The manufacturer of a log who whittles it down from a compact 7 in. by 9 in. tie to a coarse 6 in. by 8 in. has no right to hold railroads responsible for this lowering in the value of his product. If he uses a sawmill in his operations he turns out lumber from the outer portion of the log which produces the boards freest from defects and, therefore, of the highest grades and value. One of the reasons for the prejudice against sawed ties is based on the practice of making them from the poorest part of the log and the poorest logs.

The upper portion of a tie subject to the abrasion of rail wear is where compact wood is needed and a tie which lacks this section of resistive fibers is not as useful a tie as one which has a top quarter of standard rings and strength.

Cross Tie Production on the Pacific Coast

By Mason E. Kline

Sales Engineer, Charles R. McCormick & Co., San Francisco, Cal.

Less than one-third of the original stand of virgin timber of the United States remains and over one-half of this is in west coast forests. More than 60 per cent of the total remaining forest resources of this country are concentrated in Montana, Idaho, Washington, Nevada, Arizona, New Mexico, California and Oregon. After making a liberal allowance for increase over the present annual cut of the Pacific coast, there is still sufficient timber to last approximately 50 years and with an intelligent system of reforestation, such as is now being developed, it is possible that the supply will last much longer.

As wood preservation and protection from mechanical wear are perfected, tie producers will depend more and more on the so-called softwoods. It may be well, therefore, to note that the entire softwood stand of the nation is 1,755,218,000,000 ft. b.m., of which 1,364,172,000,000 ft. b.m., or approximately 78 per cent, is located in the west, while the remaining 391,046,000,000 ft. b.m., is in the southern and eastern states, giving the west 3½ times as much softwood as the entire south and east. While southern pine will remain an important factor for years, its consumption will be largely as a specialty wood, which will make the price prohibitive for ties. Consequently, each ensuing year will place a greater demand upon the west.

Unfortunately, the figures which would show the ties produced on the coast are very meager because the majority of the ties are sawn and these figures have been included with those for lumber. However, the following are authentic as far as they go.

Prior to the war the eastern seaboard had not used any Douglas fir ties, while today the annual purchases by eastern railroads aggregate approximately one million ties. The western roads tapping this territory are also buying approximately 8½ million Douglas fir ties annually. The figures available from the Forestry Service show a total production of 6,777,000 Douglas fir ties in 1909, while 1920 shows over

11,200,000. Accurate export figures are likewise missing, but estimates of the best informed exporters place the 1920 exports at 100 million feet b.m. of ties.

The annual production of redwood ties is approximately 2,400,000 pieces. This production has remained practically constant during the last five or six years. Cedar tie production has fallen to around 75,000 pieces and does not constitute a firm schedule, but rather the cleaning up when this species occurs in the course of other production.

Redwood ties are sold largely on specifications based on the American Railway Engineering Association standard's with no reference to density due to the nature of this wood. The majority of the ties for domestic consumption are split, bringing about $28 per thousand board feet at mill points. Heretofore, only sawn ties have been purchased for the export trade. These bring a higher price, the prevailing figure now being around $32 per thousand board feet at the mill.

Though the quantity offered is relatively small, hewn cedar ties for domestic use are bringing approximately $27 per thousand board feet, f.o.b. loading points, while those sawn for export average some $10 per thousand higher.

Perhaps fir more than any other species has been subjected to a greater variation in specifications with corresponding fluctuations in price. The earlier specifications permitted the cutting of ties from second-growth timber. These ties sold for around $14 or $15 per thousand, gradually advancing, however, until today such roads as accept ties of this grade place their orders at between $19 and $21. With the war came the United States Railroad Administration specifications, demanding better timber and likewise somewhat higher prices. There is a noticeable trend towards the general adoption as standard of the American Railway Engineering Association specifications.

Some roads considered their requirements called for a tie superior to those produced under the United States Railroad Administration specifications and accordingly drew up specifications which more nearly fitted their needs, embodying therein the density rule. Undoubtedly this had the desired effect of producing ties of unexcelled quality. However, those logs formerly cut into ties were no longer suitable and it became necessary to cut into these ties timber heretofore sold as lumber at higher prices. Obviously, ties of this grade were sold upon a lumber rather than a tie basis and as such were subject to the usual fluctuations of lumber prices. At present these prices are ranging between $25 and $30 per thousand at mill points.

Because of the long haul and high freight rates, west coast ties were at a very decided disadvantage and have suffered a long uphill fight. With the opening of the Panama Canal in 1914, and the establishment of a rate of approximately $10 per thousand feet, these ties entered the eastern markets on a strong competitive basis. Water rates rose to a peak of $22 in 1920 from which point they have gradually receded until the present level is $12 in New York.

Closing Business

The following officers were elected for the ensuing year: President, Walter Poleman, president, Western Tie & Timber Company, St. Louis, Mo.; first vice-president, R. E. McKee, assistant manager tie and timber sales, Long Bell Company, Kansas City, Mo.; second vice-president, M. H. Schussler, Coolidge & Schussler, Minneapolis, Minn.; secretary, J. S. Penney, T. J. Moss Tie Company, St. Louis, Mo. (re-elected); treasurer, B. J. Finch, Finch Brothers, Duluth, Minn. (re-elected). Chicago was selected as the location for the next convention.

THE THIRD SESSION of the Southeastern Carmen's Interchange Association will be held at the Hotel Murphy, Richmond, Va., February 4 and 5.

A Labor Government and an Enginemen's Strike in England

THE MEMBERS of the Associated Society of Locomotive Engineers and Firemen of Great Britain went out on strike at midnight on January 20 against an award of the National Wages Board which made some changes in working conditions and reduced wage payments for overtime work, as reported in the *Railway Age* of January 19, page 261. Two days later, on January 22, J. Ramsay Macdonald, the leader of the British Labor party, was called upon by the King to form a cabinet, the Conservative government, headed by Stanley Baldwin as Premier, having been ousted by the House of Commons on the previous day by a combined vote of Labor and Liberal members.

The Labor government does not have a majority in Commons and so is powerless to do anything without the aid of the Liberals. The Conservatives were ousted simply because the Liberals, who hold the balance of power, preferred to give the Labor party a chance rather than have a continuation of the known policies of the Conservatives. The Labor government is thus on trial and can be turned out of office at any time when the Liberals feel that the Conservatives could do the job more to their liking.

Naturally the enginemen's strike is embarrassing the Labor government seriously. There is little likelihood that its supporters among organized labor would stand for stern repressive measures against the strike and at the same time the general public will probably not be willing to put up with the inconvenience of a long strike.

Not all enginemen and firemen are striking. There are three important unions in the railway field in Great Britain besides those in the shops. One of these is the National Union of Railwaymen, an industrial union which admits all classes of railway employees. In addition to this there are craft unions for the clerks and the enginemen, and the mechanics' unions which cover outside industries as well as railway shops. The National Union of Railwaymen is thus a competitor of the craft unions in the shops and of the separate organizations of the clerks and enginemen. Enginemen and firemen belonging to the National Union of Railwaymen accepted the award of the National Wages Board and are not striking, having been warned to continue in their regular duties by the parliamentary secretary of their union, J. H. Thomas, who has been appointed to the Ministry of the Colonies in the new Labor cabinet. No leaders of the Associated Society of Locomotive Engineers and Firemen were included in the new cabinet, which perhaps may account for the fact that this organization was less unwilling to embarrass the new cabinet than was the National Union.

Meantime the strikers have shown some inclination toward peace and have agreed to a conference with railway managers on the adjustment of differences. Services on the railways has been curtailed, but not stopped. The railways are carrying on as best they can with the non-striking enginemen who belong to the N. U. R. Passenger trains are badly crowded, of course, and highway vehicles have been resorted to insofar as possible to relieve congestion. In some places it is reported that members of the Associated Society are returning to work. Elsewhere some few members of the N. U. R., in spite of advice from their leaders to the contrary, appear to have joined the walk-out. At many points the members of the N. U. R. who have remained at work have been subjected to criticism at the hands of the strikers. Transportation of freight has been curtailed to necessities, principally foodstuffs and fuel for heating; consequently, some industries and mines have had to close down. The total number of employees striking has been variously estimated at from 50,000 to 75,000—the latter figure being approximately the total of all enginemen in the country.

Freight Car Loading

WASHINGTON, D. C.

REVENUE FREIGHT CAR LOADING during the week ended January 12 was within 643 of the loading for the corresponding week of last year, after it had been below that of last year for two weeks. Light coal loading had been the principal cause of the light loading in the previous weeks but this increased to 211,098 cars. The total loading was 872,265 as compared with 872,908 in 1923 and 714,191 in 1922. Grain, coke, forest products, ore and miscellaneous freight showed decreases as compared with the corresponding week of last year, when the heavy loading that continued throughout 1923 was in progress, while livestock, coal and merchandise showed increases. Increases as compared with last year were also shown in the Eastern, Pocahontas, Central Western and Southwestern districts. The summary of the weekly report compiled by the Car Service Division of the American Railway Association follows:

REVENUE FREIGHT CAR LOADING WEEK ENDED SATURDAY, JANUARY 12, 1924

	1924	1923	1922
Districts:			
Eastern	210,834	209,848	172,814
Allegheny	177,233	184,123	138,414
Pocahontas	39,943	31,837	30,353
Southern	133,149	136,276	108,129
Northwestern	108,383	114,167	98,689
Central Western	141,853	138,889	110,449
Southwestern	60,870	57,768	55,343
Total Western districts	311,106	310,824	264,481
Commodities:			
Grain and grain products	44,386	51,025	49,694
Live stock	39,765	36,880	35,851
Coal	211,098	198,770	157,964
Coke	11,783	13,794	7,212
Forest products	63,173	68,517	48,195
Ore	7,614	11,014	4,515
Mdse. L.C.L.	219,953	211,249	204,567
Miscellaneous	274,493	281,659	206,193
Total	872,265	872,908	714,191
January 5	703,269	767,296	599,433
December 29	.....	615,431	704,224
December 22	.....	877,257	826,312
December 15	.....	899,522	879,052
Cumulative loading to date	1,575,534	1,640,104	1,313,624

The freight car surplus for the week ended January 7 was 353,790 cars, including 165,795 coal cars and 151,245 box cars.

The railroads in 1923 placed in service 197,875 new freight cars as well as 4,037 new locomotives, according to reports made by the carriers to the Car Service Division of the American Railway Association. New coal cars numbered 83,296 and box cars, 78,711. There were also installed during the year 22,078 refrigerator cars, of which 14,508 were those of railroad owned private companies, as well as 5,835 stock cars.

The reports also showed that on January 1, 1924, the railroads of the United States had 25,619 new freight cars on order, with deliveries being made daily. Cars on order included 10,128 box cars, 9,990 coal cars, 1,790 refrigerator cars and 3,017 stock cars. The railroads also had 510 new locomotives on order.

The railroads on January 1 had 158,175 freight cars in need of repair or 6.9 per cent of the ownership. This was a decrease of 57,836 compared with the number in need of repair on January 1, 1923, at which time there were 216,011 or 9½ per cent. Of the total, 118,653 or 5.2 per cent were in need of heavy repair, while cars in need of light repair totaled 39,522 or 1.7 per cent.

EVERY TWO DAYS, on the average, an engineman fails to sound the whistle on approaching a certain highway crossing in Corning, N. Y. This statement is made in a letter from Corning to the New York World, in which the writer says that he has kept a record of trains passing his house since September 11. Up to the sixteenth of January 61 trains had passed, giving no signal at any time. The writer made this check of the behavior of trains because he had been hit by a passenger train, not far from his house, and been crippled for life.

New York Central Raises Enginemen's Wages

THE NEW YORK CENTRAL on January 22 reached an agreement, to go into effect as of January 16, with representatives of the enginemen, firemen and hostlers, terminating a long series of conferences concerning wages; under which new contracts are made, for one year, granting approximately 5 per cent increases in the rates of pay. The increases amount to 24 cents per 100 miles in passenger service, 36 cents in freight service, and 32 cents a day for yard and hostler service. A number of clauses in the old contracts calling for arbitrary additions to pay are modified in favor of the company. The new contracts go into effect on all of the roads in the New York Central system, including the Chicago Junction railway, and also on the Rutland Railroad.

Of the clauses modifying working rules the more important permit the discontinuance, when stoker-fired locomotives are provided, of the requirement that firemen in the freight service between Albany and Syracuse be relieved at Little Falls, and between Syracuse and Buffalo be relieved at Wayneport; the discontinuance of arbitrary mileage allowances on the Pennsylvania division; and the modification of arbitrary reporting time on the Boston & Albany, the Pittsburgh & Lake Erie and the Cleveland, Cincinnati, Chicago & St. Louis.

Where engines have boosters the weight on the trailers will be counted as weight on drivers.

The modification by which firemen on through freight runs between Albany and Syracuse and Syracuse and Buffalo, shall run through, provides that there must be enough locomotives equipped with stokers to permit firemen to have a stoker-fired engine in both directions.

All of the wage rates for enginemen and firemen are based on the size of the locomotive as measured by the weight on drivers. Following are examples of the rates under the new agreement, the figures in each case representing cents per mile. (The rates per day are in all cases exactly 100 times the amounts here shown):

Passenger service. With engines having 40 tons (80,000 lb.) on drivers, engineers, 6.16; firemen, 4.56. With engines having 100 to 125 tons on drivers, engineers, 6.48; firemen, 5.04; helpers (electric locomotives), 4.72. Engines of 225 to 250 tons, engineers, 6.88; firemen, 5.36; helpers, 4.88.

Freight service. Engines of 40 tons, engineers, 6.84; firemen, 5.00; helpers, 5.00. Engines of 100 to 125 tons, engineers, 7.56; firemen, 5.72; helpers, 5.16. Engines of 150 to 175 tons, engineers, 7.84; firemen, 6.04; helpers, 5.16. Mallet engines less than 275,000 lb., engineers, 8.54; firemen, 6.20. Over 275,000 lb., engineers, 8.76; firemen, 6.51.

Local freights, the usual arbitraries.

Yard enginemen, $6.72 to $8.04 per day; firemen, $5.28 to $6.64. Hostlers outside, $5.92 a day; inside, $5.28; helpers, $4.72.

Finally, the agreement contains a clause to the effect that the employees' committees will co-operate with the railroad management in experimenting with some other method of compensation than the present. A joint committee will be established to study a plan of operation whereby the compensation shall be based upon the services rendered, measured by tons moved and time consumed.

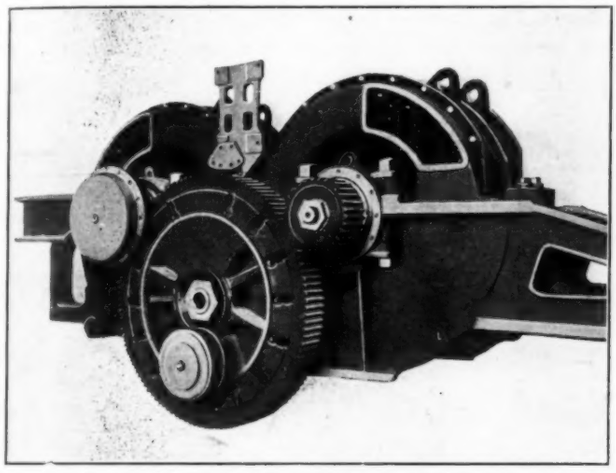
AN ORE DOCK of the Chicago & North Western at Ashland, Wis., was damaged by fire on January 17 to the extent of $2,000,000. The dock was 1,900 ft. long and contained 278 pockets, of which 200 were destroyed. The two other wooden docks were not harmed.

Pennsylvania Builds Three Electric Locomotives

Machines All of One Design But One Will Be Used for Freight and Two for Passenger Service

By T. C. Wurts
General Engineer, Westinghouse Electric & Manufacturing Company

At the Altoona shops of the Pennsylvania there are now being built three 200-ton electric locomotives, all of the same type. One of these is to be used for freight service under the single phase alternating current trolley, while the other two are to be given extensive tests to determine their adaptability for passenger service, after which it is proposed to use them as direct current locomotives on the New York tunnel and terminal division of the railroad.



Two of the Single Phase Motors Mounted in Cradle, Showing the Springs in the Gear Center

With the prospect of extensive main line electrification in the near future, and with the probability of the electrification of the Altoona grade before many years, the Pennsylvania Railroad built a split-phase locomotive of 4,000 hp. continuous rating, known as the "FF-1" locomotive, and placed it in service in the spring of 1917. The war and government control of the railways, combined with other causes, delayed somewhat the test of this locomotive, which is now in regular freight service between Philadelphia and Paoli.

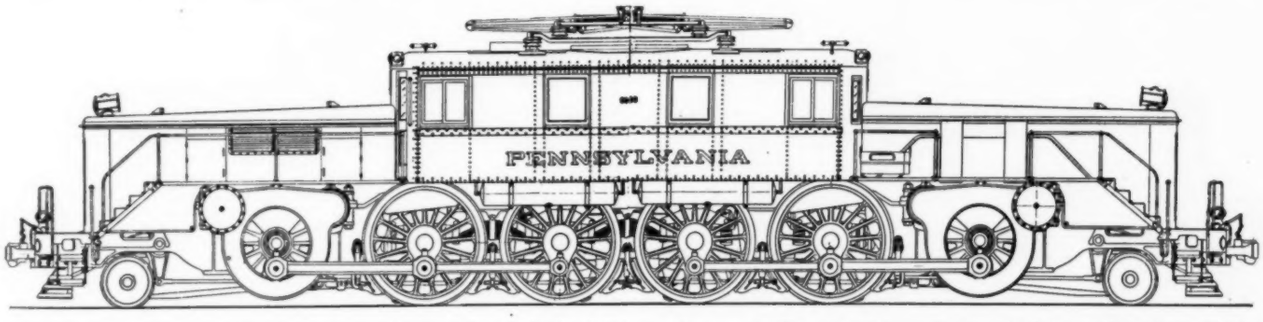
Each of the three new locomotives will weigh approximately 400,000 pounds, and will be equipped with four single phase commutator type motors. These motors have a continuous rating on single phase power of 760 hp., giving a total locomotive rating of 3,040 hp.

The locomotives have a 2-8-2 wheel arrangement with the so-called "steeple" type cab construction. The motors are arranged two per jack shaft, and are mounted outside of, and at either end of, the driving wheelbase. Each jack shaft serves two pairs of drivers. The connection between the motors and the jack shaft is by means of pinions and flexible gears.

The single phase freight locomotive will have a gear ratio of 30:118 and a maximum speed of 35 miles an hour. The two locomotives that are being arranged for direct current passenger service over the New York tunnel and terminal division will have a gear ratio of 50:98, permitting a maximum speed of 70 miles an hour.

Although two of these locomotives are being laid out for d. c. operation, while the third is to operate under an a. c. trolley, the motors and all other parts possible are being made identical. The space required for the transformer on the a. c. locomotive is devoted to accelerating resistance on the d. c. locomotives. The pantagraph on the a. c. locomotive gives place to the third rail shoe on the d. c. locomotives, etc.

Side rods will be utilized for the transmission of power from the jack shaft to drivers. Flexibility between the motor armature and the running gear will be provided by springs set in the gear center, and flexible pinions in one of each pair of motors geared to their common jack shaft. These springs in the gear center and in the pinion have been especially devised by the Westinghouse Electric & Manufacturing Company. They are of the leaf type, and are inserted into their pockets without any initial tension, and are so designed that they will be active throughout the operating range of the locomotives. Throughout the design of these locomotives, the underlying principal adhered to has been that of extreme simplicity.



Side Elevation of One of the Locomotives. The Principal Dimensions are: Dia. of Drives 80 in.; Driving Wheelbase 22 ft. 3 in.; Dia. of Guiding Wheels 36 in.; Total Wheel-Base 54 ft. 11 in.; Length Inside Knuckles 68 ft. 2½ in.

A. C. Freight Locomotive

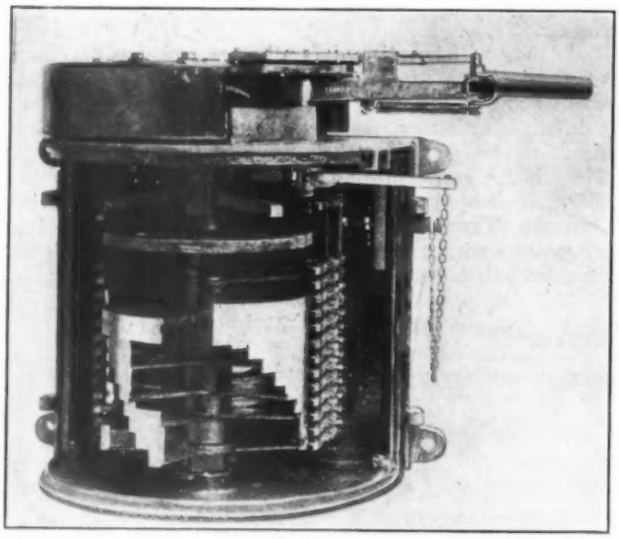
The outstanding feature of the freight locomotive is the traction motor, which has the largest capacity possible under the limitations prescribed by the Pennsylvania Railroad. It should be noted in this connection that this motor has the

greatest capacity of any single phase commutator type traction motor that has ever been built in this country. Some idea of its size can be gained from the following figures. The outside diameter of the frame is 76 inches, while the motor is 43¾ inches long. The main frame of the locomotive is so designed and machined that it forms a cradle into which the motor is inserted, thus making the latter an integral part of the locomotive main frame. The motor bearings are carried on the side frames of the locomotive, and are entirely separate from the main frame of the motor itself, but are integral with the motor cradle. In order to maintain the high rating previously mentioned, forced ventilation has been necessary, air being drawn through the motors instead of blowing it through as has been the usual practice with forced ventilation.

Another interesting and novel feature of this locomotive is the use of an oil-insulated, force-cooled transformer. The tank of this transformer is built into the locomotive, but it is entirely separate from the cab structure. Its base rests on pads on the locomotive main frame, while the top is formed by a portion of the cab roof, but at no point is it rigidly connected to the cab structure. The sides of this tank are formed from a single sheet of steel, with a vertical seam joined by a double row of rivets. The bottom of the tank, which is an integral cup shaped piece, is set into the side sheets and riveted into place.

The transformer oil will be cooled by being pumped through a forced ventilated radiator. A single motor is provided to drive both the oil pump and the blower which provides the ventilating air.

The locomotive roof is constructed so that the removal of the transformer core from the locomotive can be accomplished by simply removing that portion of the roof directly over the transformer.



Master Controller for the Direct Current Locomotives

Two motor-driven blower sets are provided, one for each pair of traction motors. The motors driving these sets and the motor driving the oil pump and blower mentioned above are identical with the single exception of the shaft extension. This feature leads itself to simplicity and ease of maintenance.

The control of the traction motors again emphasize simplicity. The apparatus provided consists only of a master controller, a reverser, the necessary unit switches for a notch-by-notch voltage increase to the normal voltage of the traction motors, preventive coils, and the minimum number of relays consistent with safety. In addition to this apparatus there is a small motor-generator set for charging the storage battery which furnishes the energy for the control apparatus and lights. The brake system is of the standard locomotive type. The brake lever system is designed for clasp brakes, giving 100 per cent braking power at the driving wheel.

LOCOMOTIVE CAPACITY

	Continuous	Hourly
Tractive effort (lb.)	50,000	62,000
Speed (M. P. H.)	23	19.75
Maximum T. E. (lb. at 33 1-3% adhesion)		100,000
Maximum speed (M. P. H.)		35

The locomotive capacity as given in the table means that the locomotive is capable of hauling 2,370 adjusted tons up the slope west of Altoona, Pa., at an approximate speed of 24 miles an hour.

D. C. Locomotives

As indicated earlier in the article, the passenger locomotives are of the same fundamental design as the freight locomotive just described, and are intended for operation on the New York tunnel and terminal division. The traction motors are identical to those used on the freight locomotive, and with the gearing provided the locomotive is capable of handling the largest Pullman train entering or leaving the New York terminal.

Master Controller for the Alternating Current Locomotive

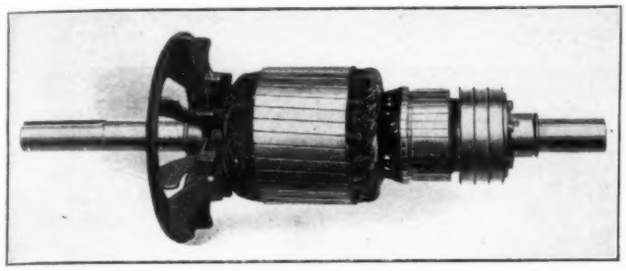
The blower sets are also a duplicate of those on the a. c. locomotive. A number of parts on the electrical equipment required for d. c. operation which cannot be made duplicate of the parts on the a. c. locomotive have been made duplicate of the parts on the present tunnel and terminal locomotives. Among these parts may be mentioned the third rail shoes, resistance grids, etc.

Mention has already been made of the fact that the motors for these locomotives are in capacity the largest single phase traction motors in this country. The d. c. locomotives have the additional distinction of being equipped with the largest unit switches in existence. These switches are of the standard Westinghouse electro-pneumatic type, and have a continuous capacity of 3,000 amperes. The arc rupturing capacity of these switches is many times this amount on a 750-volt circuit. A total of 23 switches is required on each locomotive to handle the motor circuits.

These locomotives will be completed and placed in service early this year, at which time it is proposed to make extensive tests to determine the practicability of this type of locomotive both for high speed passenger and for freight service.

A Motor That Corrects Power-Factor

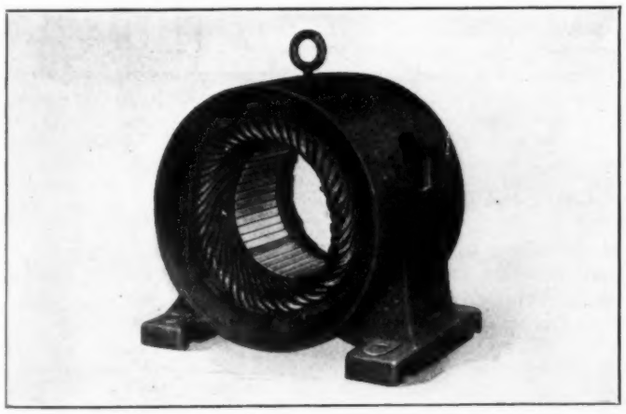
THE WAGNER ELECTRIC CORPORATION, St. Louis, Mo., has developed a radically new type of constant-speed alternating-current motor, designated as the Fynn-Weichsel motor. It starts as a slip-ring induction motor, having starting torque characteristics much more favorable than the usual squirrel-cage type; that is, it will develop 150 per cent torque with a starting current of from 150 to 200 per cent of full load current. After the motor attains synchronous speed, which it will do under 150 per cent load, it becomes a self-excited synchronous induction motor.



The Rotor Is Provided with a Commutator and Slip Rings. The Fan at One End of the Rotor Furnishes Directed Draft Ventilation Around the Stator Iron and Through the Rotor Iron Below Slots

With appropriate windings, the motor can be made to operate at unity power-factor, or with a definitely leading current to compensate for lagging current taken by other motors on the same line.

As a synchronous induction motor, it will carry 150 per cent load without falling out of step. Above this value it drops into induction motor characteristics and continues to run as a slip-ring motor, to the breakdown point of approximately 300 per cent load before it stops. In this way the motor combines the favorable and desirable characteristics of both the slip-ring induction motor and the synchronous motor without any of their most objectionable features. It may be designed for a wide range of characteristics with respect to power-factor at various loads.



The Stator of the Fynn-Weischel Motor Is Similar to a Standard Induction Motor Stator

Loading the motor beyond the limits of synchronous speed operation simply establishes slip sufficient to carry the load as an induction motor. There is always a synchronizing tendency that reduces slip and when the load decreases to a point below 150 per cent of full load it pulls the rotor back into synchronism. This characteristic enables it to carry temporary excess overloads in the same way that the squirrel-cage or slip-ring induction motor will carry overloads, thereby making the motor as stable and practical in its operation as present types of induction motors.

The advantages claimed for this motor are as follows: The power-factor correction is at the most usual source of low power-factor. Heavy currents drawn by synchronous motors when started or when thrown out of step are eliminated, and the necessity for special attendance for operation and adjustment of large synchronous motors is obviated. The motor eliminates the necessity for synchronous convertors or other corrective means at transmission and distribution centers in so far as they may be required for industrial motor loads. Actual energy wasted upon the customers premises is reduced by from 3 to 5 per cent. The motor makes possible a 30 per cent reduction in cost of future plant extensions after present equipment is fully loaded.

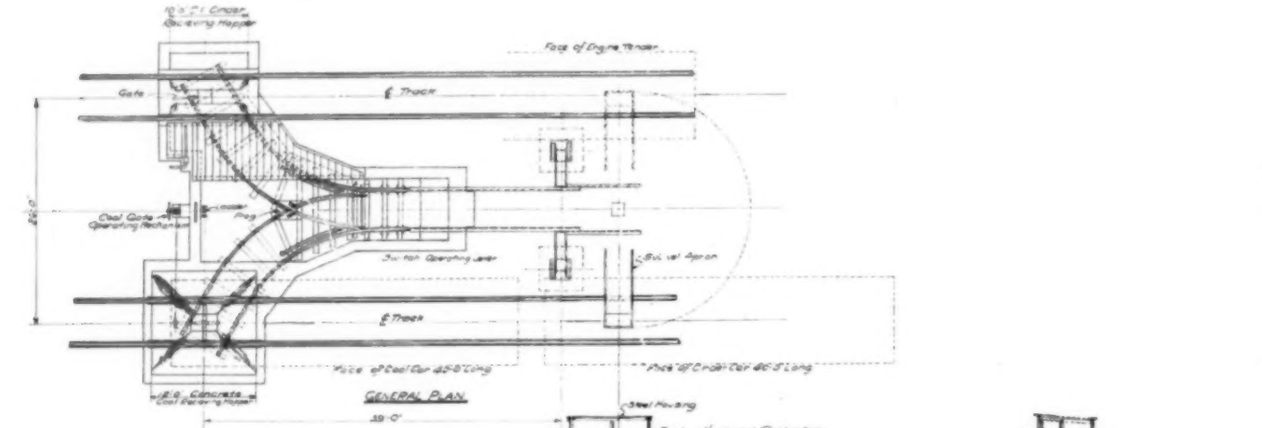
A Combined Cinder and Coal Hoist

A UNIQUE DEVELOPMENT in mechanical coaling facilities has just been brought out by the Roberts & Schaefer Company, Chicago, in the form of a combined coal and cinder handling plant for use in locations where moderate first cost is an important consideration and storage is not essential. This equipment is an adaptation of the N. & W. cinder plant which this company has installed on many railroads during the last two or three years and embodies the essential features of the mechanical hoist used

The N. & W. Coal and Cinder Plant in Service on the Pennsylvania at Millville, N. J.

in this cinder plant for the handling of both coal and cinders.

The plant provides for an inclined hoist between two tracks spaced 26 ft. center to center, which terminates at its lower end in two branches extending under track hoppers provided under each track. This hoist is provided with a bucket of 80 cu. ft. capacity which is elevated to a dumping device for discharging its contents into a hooded apron stand where a hand wheel is also provided for the ready swinging of the delivery spout from one track to the other. The bucket is operated by a 25-hp. motor geared to a cable drum housed in a steel case at the top of the hoist frame. The hoist is controlled by a Cutler-Hammer electric push-button controller, properly safeguarded against over-wind of the cable. These hoists are shipped partly assembled and can be set up readily on concrete foundations construct-



General Plan of the Combined Cinder and Coal Hoist

mounted on a swivel bearing so that it may be swung into position to discharge over either track. One of these tracks is used by engines for dumping cinders and for receiving coal in the tender, and the other track for receiving coal from coal cars and for loading out cinders. The distance between the track hoppers and the discharging positions of the swivel spout is such that the tender of the locomotive is directly under the spout when the ash pan of the locomotive is spotted over the cinder pit track hopper. In similar manner one car may be spotted for receiving cinders when a second car is in position to discharge coal into the coal hopper. The two track hoppers are provided with undercut clam shell gates having an opening 24 in. by 30 in. The coal hopper is 12 ft. long and of reinforced concrete construction, while the cinder hopper is made of cast iron to withstand the effects of the hot cinders which are quenched before discharging them into the bucket. The cinder hopper has a length of 10 ft. so that it will readily take all the cinders from a locomotive at one spotting.

The hoist bucket is operated over a track laid with 40-lb. rail, delivery to either of the track hoppers being controlled by a switch which is operated from a lever on the operating ed according to plans furnished by the manufacturer. A combined coal and cinder hoist of the type is now in service on the Pennsylvania at Millville, N. J.

Keystone

Station at Arica, Peru

General News Department

The **Chicago, Burlington & Quincy** announces that beginning March 1 all of its refrigerator cars, when used on other roads, are to be accounted for on a mileage basis.

The Chicago Union Station Company, Chicago, has closed a contract with Fred Harvey for the operation of all restaurants, lunch counters and other concessions in the new Union Station.

The Southern Pacific has just put in effect what is claimed to be the longest regular locomotive run in the world, 815 miles, between El Paso, Texas, and Los Angeles, Calif. These engines, hauling through passenger trains, are the 4-8-2 type.

A St. Louis Council of the National Transportation Institute has been formed at St. Louis, Mo., with Harry Scullin of the Scullin Steel Company, as chairman, and Festus Wade, president of the Mercantile Trust Company, chairman of the executive committee.

The Canadian National has opened a radio broadcasting station at Calgary, Alta., from which musical and other programs will be broadcast. Receiving sets are now in operation on the trans-continental trains of the National lines and it is the intention of the company to install similar sets in its hotels.

The petition of the Buffalo, Rochester & Pittsburgh for a modification of the Interstate Commerce Commission's automatic train control order to permit of an installation on the Rochester division between Rochester and Ashford, N. Y., instead of between the points designated in the order, has been denied by the commission.

The Susquehanna River & Western Railroad, extending from Duncannon, Pa. (on the Pennsylvania 15 miles west of Harrisburg), westward to New Germantown, Pa., 35 miles, is slowly starving from lack of business. Under the direction of Rodney Gring and George Ross, owners or operators of the eastern section of the road, which is standard gage, a campaign is being conducted to raise $20,000 to change to standard gage the 22 miles of the road west of New Bloomfield, which is narrow gage. The people of Perry county are called upon to see that this sum is raised, with the alternative that they will soon be without any railroad connection with the rest of the world.

Conditions of Cars and Locomotives in December

The Interstate Commerce Commission's monthly report to the Senate on the condition of railroad equipment shows that of 3,321 locomotives inspected in December, by its Bureau of Locomotive Inspection, 2,115 were found defective and 405 were ordered out of service. Of 54,090 freight cars inspected by the Bureau of Safety, 1,830 were found defective. During December, 1922, of 62,780 freight cars inspected 5,146 were found defective. During December, 1923, no information of violation of the safety appliance laws was transmitted by the commission to any of the United States attorneys.

Committee to Award Prizes for Safety Campaign Poster

The committee which is to award the American Railway Association's prize for a safety poster consists of C. C. McChord, Interstate Commerce Commission; H. G. Taylor, president of the National Association of Railway & Utilities Commissioners; Thomas P. Henry, President of the American Automobile Association; L. A. DeBlois, president of the National Safety Council; Charles Clifton, president of the National Automobile Chamber of Commerce; and H. A. Rowe (D. L. & W.), chairman of the A. R. A. committee on prevention of highway crossing accidents.

Canadian National Increases Its Net by Over 17 Million in 1923

The Canadian National Railways, according to an official statement issued by the president, Sir Henry Thornton, earned in 1923 net revenues of $20,127,447, as compared with $2,480,512 in 1922. These figures are preliminary and may be slightly changed later. Operating revenues in 1923 amounted to $254,662,447, an increase of $21,005,559 over 1922, and operating expenses rose $3,358,624 over the 1922 total, which was $231,176,376.

The Railway as a Citizen and Taxpayer

Better pay for teachers and preachers is urged by the Southern Railway in an advertisement appearing in southern newspapers. Pointing out that it pays three million dollars a year in school taxes to the states, counties and municipalities through which its lines run, the railway company expresses the view that its own best interest and the welfare of the children of its 60,000 employees will be served best by more adequate rewards for the men and women who, in pulpits and class-rooms, are building the citizenship of the future. "The south of tomorrow will be made by the children of today. The boys now in school and attending the churches will be the captains of industry and the leaders in the professions a few years hence."

St. Louis Railway Club Meeting

At the January meeting of the St. Louis Railway Club, Grafton Greenough, vice-president of the Baldwin Locomotive Works, outlined important historical events in the development of locomotives in a paper entitled, "The Modern Locomotive." This paper was similar to two others recently presented, the first by Samuel Vauclain, president of the Baldwin Locomotive Works, before the American Railway Association last June and the second by Mr. Greenough before the Canadian Railway Club in November, 1922. Among those who participated in the discussion of Mr. Greenough's paper were Dr. W. F. M. Goss, F. W. Green, vice-president of the St. Louis-Southwestern and A. H. Burns of the Westinghouse Air Brake Company.

Conditions on the Alaska Railroad

The tide of travel on the Alaska Railroad has been inbound into the interior of Alaska, instead of outbound, for the first time in the history of winter seasons in the territory, according to a special report received by the Secretary of the Interior. The trains operating between Seward and Fairbanks have not missed a single on-time schedule during the entire winter. There has been little use for the rotary snow plows.

On the day the report was sent the temperature was 23 degrees above zero, at Anchorage, 32 above zero at Seward, and 10 above at Fairbanks, the northern terminus. Because of the lack of snow, transportation of mining and timber supplies by sled to the interior mining and logging camps has been impossible.

The Alaska Railroad, as a result, has erected two large storehouses at Dunbar near Fairbanks, and one at McKinley Park station. Railroad tie and wood contractors have been unable to make delivery of their products because of the unusually mild winter.

Hours-of-Service Report

The Interstate Commerce Commission has issued its regular yearly report showing, in detail, for each railroad company, instances in which employees have been reported as on duty excessive hours. There are four large tables containing the data, as related to the different provisions of the law applying to trainmen and telegraphers. The causes of delays to trains are given as reported by the railroad companies without regard to whether or not any given case appears to have been excusable.

The total number of instances, in the year ending June 30, 1923, was 65,413, as compared with totals for the four years preceding as follows:

1922	1921	1920	1919
31,682	67,686	106,501	149,660

The total for 1923 is made up mainly of 37,387 cases of trainmen continuing on duty for more than 16 hours and 24,866 of telegraphers (in 24-hour offices) continuing on duty more than nine hours.

A Locomotive Roster 85 Years Old

Bulletin Number Six has been issued by the Railway and Locomotive Historical Society, 6 Orkney Road, Brookline, Mass. Like the preceding bulletins in this series the pamphlet is well filled with interesting items about railroad life in the past. The Carrollton Viaduct, on the Baltimore & Ohio, near Baltimore, is shown in a photograph as it existed in 1829, with one car, drawn by a horse, passing over it.

The most prominent article in this issue is a list of locomotives as reported to the Congress of the United States in the year 1838. It appears that this was made up by the Treasury Department, at the request of the House of Representatives, and no doubt is quite complete. It includes stationary engines and the engines of steamboats as well as railroad locomotives, and the total number is over 3,000. The number of locomotives is about 350. Fifty-four railroads are named, and 39 builders. Of the builders, 11 are English manufacturers. The principal American shops represented were located in Lowell, Philadelphia, Boston, New York, Paterson and Baltimore.

The names of the railroads, with the number of locomotives reported by each are as follows:

Bangor & Piscataqua	2	Hazelton Coal Company	2
Boston & Providence	11	Beaver Meadow	5
Boston & Worcester	10	Allegheny Portage	17
Boston & Lowell	7	Newcastle & Frenchtown Turnpike & R. R. Co.	6
Eastern Railroad	4	Philadelphia, Wilmington & Baltimore	14
Andover & Haverhill	3	Baltimore & Ohio	18
Taunton Branch	2	Baltimore & Susquehanna	7
New York, Providence & Boston	6	Portsmouth & Roanoke	6
Utica & Schenectady	1	Greenville & Roanoke	1
Saratoga & Schenectady	2	Raleigh & Gaston	9
Long Island	3	City Point	1
New York & Harlem	4	Richmond & Petersburg	7
Buffalo & Niagara Falls	3	Richmond, Fredericksburg & Potomac	10
Lockport & Niagara Falls	2	Wilmington & Raleigh	4
Tonawanda	2	South Carolina Canal & Railroad Company	27
Camden & Amboy	9	The Central R. R. & Banking Co. of Georgia	3
Camden & Woodbury	2	St. Joseph & Lake Wimmico	2
Morris & Essex	3	Mobile & Cedar Point	1
New Jersey	7	Ponchartrain	4
Paterson & Hudson	4	Carrolton	5
Philadelphia, Norristown & Germantown	8	Nashville & New Orleans	2
Philadelphia & Reading	5	Lexington & Ohio	2
Philadelphia & Trenton	4	Mad River & Lake Erie	1
Philadelphia & Wilmington	7	Erie & Kalamazoo	2
Philadelphia & Columbia	34	Central R. R. of the State of Michigan	4
Harrisburg, Portsmouth, Mt. Joy & Lancaster	7		
Cumberland Valley	5		
Danville & Pottsville	1		
Williamsport & Elmira	1		

Most of the items give the name of each locomotive, its horsepower, and the date of construction.

On the Victorian Railways

Traffic News

The Los Angeles & Salt Lake has applied to the California Railroad Commission for authority to discontinue the operation of mixed trains on its Glendale branch.

The Duluth, South Shore & Atlantic car ferry, "Chief Wawatam," carrying a passenger train with 75 persons aboard, became icebound on the morning of January 20 in the Straits of Mackinac, two miles from Mackinaw City, Mich., and was still frozen in at last reports (January 22).

Old-time farmers' institutes will be held under the auspices of the Bureau of Public Relations of the Great Northern at Angus, Minn., on January 28, Lockhart on January 29, Warren on January 30, Argyle on January 31, Perley on February 1 and Halstead on February 2. The meetings will be informal and any one present will be at liberty to ask questions. Among the subjects to be considered will be dairying, diversified farming, livestock, marketing, feed crops, weeds, sugar beets, potatoes, freight rates and railroad service. Among the speakers will be N. J. Holmberg, state commissioner of agriculture, St. Paul, Minn., and A. J. McGuire, manager of the Minnesota Co-operative Creameries Association.

"The Sunny South" is the title of a handsome advertising pamphlet 7 in. x 10 in., issued by the Passenger Department of the Southern Railway which should be called a work of art, rather than advertising. It is circulated to advertise the mountain and seashore resorts, and the scenery, in those parts of the territory served by this company's lines which northern pleasure seekers are likely to turn to when planning long or short vacations; but it is made up wholly of pictures, 31 reproductions of pencil sketches by E. H. Suydam, of Philadelphia. These were drawn in Asheville, Augusta, Aiken, Charleston, Savannah, Mobile, New Orleans, Jacksonville and numbers of other cities and country places. They depict characteristic scenes in every place, and the artist evinces not only taste and skill, but a discriminating judgment. If the most successful advertising circular is one which a recipient is most likely to deem worth keeping, for itself alone, this pamphlet would take first prize, for the pictures are the main thing; the advertising of the railroad is modest and secondary. At the same time the advertising is terse, clear and wholly adequate.

Keystone

A Stretch of D. T. & I. Track Before Reballasting

Commission and Court News

Interstate Commerce Commission

Grain Rates from South Dakota

In a decision on a complaint instituted by the Railroad Commissioners of South Dakota the Commission has held that rates on grain and grain products from points in South Dakota to various markets are unreasonable to the extent indicated in the report and has prescribed reasonable rates for the future. The maintenance of relatively lower rates on grain, intrastate, in Minnesota, than apply from points near the South Dakota-Minnesota line in South Dakota to points in Minnesota is found to result in undue prejudice to shippers and localities in South Dakota, in unreasonable preference of shippers and localities in Minnesota, and in unjust discrimination against interstate commerce, but the record does not afford an adequate basis for fixing intrastate rates, and no order is made.

New England Divisions Case Construed

In response to a petition filed by the railroads for instructions as to the application of the amended order in the New England divisions case, in which the commission ordered an increase for the New England lines in the divisions of the joint freight rates to and from New England, the commission has issued a report construing the amended order, in which it decides that:

The amended order, entered March 28, 1922, is not retrospective; it does not apply to revenue derived from shipments which originated prior to April 1, 1922.

The order does not affect divisions of any joint rate applied to transportation performed in part through Canada.

The order applies to all joint commodity rates, otherwise subject to it, except joint rates on coal and coke, fluid milk and its edible products, high explosives, and certain low-grade commodities moving short distances.

Terminal and other allowances, arbitraries, etc., in effect March 28, 1922, are included in the divisions affected by the order.

The order affects the divisions of all carriers defendant, including those in the West and in the South, and requires each to make a pro-rata shrink in its divisions, in the absence of agreement otherwise.

Numerous other questions, relative to the application of the order in special cases are answered and the commission adds:

"This proceeding discloses an unwarranted tendency on the part of the carriers to work at cross purposes in putting our order into effect. Many of the differences of opinion between them have arisen as the result of the disposition of certain carriers and groups of carriers to disregard the plain language of the order and to reframe the order by way of interpretation into something which they would prefer and which is in accordance with what they deem to be the reasons controlling our decision. Our orders should be interpreted, when the language is unambiguous, in accordance with the fair and natural meaning flowing from the language and, so interpreted, should be promptly obeyed. If hardships are thought to result, remedy should be sought by a petition for modification and not by an attempt to limit or enlarge the unambiguous requirements of the order through a process of construction. Many reasons advanced here in support of the various contentions as to construction could be appropriately advanced in a proceeding seeking modification. Such petitions have been filed and will be set for hearing in the near future."

State Commissions

Commutation Fares Advanced in Massachusetts

The Public Utilities Department of Massachusetts on January 11 issued a decision approving the increases in prices of commutation tickets to and from Boston proposed in tariffs recently filed by the three principal roads of the state. Twelve-ride tickets, which are good for bearer, may be advanced 20 per cent beginning on January 15, on all three of the roads; but the increase of 20 per cent on monthly tickets, good only for the purchaser, was allowed on the Boston & Maine and the New York, New Haven & Hartford but disallowed on the Boston & Albany. The decision finds that the two roads first named have insufficient earnings, but as to the Boston & Albany, this claim is held to be not proved. Reference is made to the recent action of the Interstate Commerce Commission in allowing the New England lines an increase in their share of through freight rates but apparently the claim of the carriers, that this item will not sufficiently relieve their financial burdens, is accepted. The states of Maine and Vermont have approved increases in monthly tickets and the Interstate Commerce Commission has approved a similar increase in interstate tickets on the Boston & Maine. The Boston & Albany has less claim for higher fares because it has a lighter burden of unprofitable branch lines than have the other two roads.

The 12-ride tickets are shown to be too low as compared with other tickets. Since 1914, single fare tickets in the Boston district have been advanced 80 per cent while the 12-ride tickets have been advanced only 52 per cent.

The Department is satisfied that the 12-trip rider does not contribute his fair proportion of the current expenses of the roads. The claim of objectors that the railroads ought to increase their income by improved service, which would bring increased patronage, is rejected.

A minimum charge of ten cents a ride is approved; the terminal expenses are heavy and these short distance riders have made a very slight contribution to this item.

"The present fares appearing inadequate, the only remaining question for our consideration is whether the proposed increases are so high as to render them unjust and unreasonable. The proposed increases will yield to the carriers about 3 mills per passenger mile. If conditions remain the same as at present, this 3 mills added to the revenue now received will give to the New York, New Haven & Hartford approximately 1.8230 cents per passenger mile, the Boston & Maine 1.7848 cents per passenger mile and the Boston & Albany 1.6958 cents per passenger mile.

"After careful consideration of the problem presented, we are of the opinion that the present rates are unjust to the carriers and that the rates proposed will not be unjust or unreasonable to the public and are necessary to obtain a reasonable compensation for the service rendered by the carriers."

Yielding to innumerable protests from all classes of people and criticisms voiced by numerous members of the Legislature, the Department of Public Utilities has promised to reopen this matter and hold further hearings.

Court News

Fire From Locomotive Sparks

The Kentucky Court of Appeals holds that evidence that a smoldering fire was left on the right of way the night before plaintiff's unoccupied house, 36 ft. away, was burned did not warrant an inference that the house was burned by the spreading of that fire.—C. & O. v. Crider (Ky.) 250 S. W. 499.

Coal Exchange, Acting for Members, Not Liable for Demurrage

The Federal District Court for the Southern District of New York holds that, although the consignee is liable for freight and demurrage regardless of his knowledge of their amount, an association of coal shippers acting as agent for shippers and owners in getting the coal to tidewater, was not liable for demurrage though named in the bill of lading as consignee for shippers' account, the relation of the exchange to its members being known to all the carriers.—In re Tidewater Coal Exch., 292 Fed. 225.

Railroad Not Liable for Injuries to Passenger Pushed Under Train by Crowd

In an action by a passenger who was pushed under a train by a crowd rushing for the train, the crowd being composed chiefly of workmen starting for the week-end half-holiday, the Massachusetts Supreme Judicial Court holds that the railroad was not liable, the place from which the crowd came and the

occasion which called it together not being calculated to incite disorder, violence, or disregard of the rights of others, and there being nothing to indicate the likelihood of impetuosity, lawlessness, riotousness or force.—Lack v. Davis (Mass.) 139 N. E. 819.

Decisions Under Federal Employers' Liability Act

The Federal District Court of Minnesota holds that a trackman assisting in clearing snow from tracks between two points within the state, with directions to take a local freight back to the gang's headquarters, was not engaged in interstate commerce when injured while attempting to board the train.—Chunes v. Duluth, W. & P., 292 Fed. 153.

Railroad Assessed for Benefits from Bridge May Offset Loss of Traffic Caused Thereby

The Circuit Court of Appeals, Eighth Circuit, holds that a railroad company, assessed for benefits from the construction of a public bridge, may offset to such benefits the loss of traffic it will sustain from the use of the bridge.—Sebastian Bridge Dist. v. Missouri Pacific, 292 Fed. 345.

Request to Trace Goods Not Claim for Loss

Written notice by the shipper to freight agent of non-delivery of shipment, with request that they be traced, is held not to constitute a written claim, within the requirement of bill of lading, which will support an action.—Browning, King & Co. v. Davis, 120 Misc. (N. Y.) 320, 199 N. Y. Supp. 775 This question apparently has not been decided before in New York. In other jurisdictions different conclusions have been reached.

Consignee Countermanding Order Not Liable for Demurrage

A consignee countermanded his order November 15, and bill of lading was not issued and the railroad did not obtain control of the goods until November 20. The consignee refused the goods. The South Carolina Supreme Court held he was not liable for demurrage.—Davis v. Allen (S. Car.) 117 S. E. 547.

New Jersey Statute as to Maintenance of Crossings Applicable to Spur Tracks

The Circuit Court of Appeals, Third Circuit, holds that the New Jersey statute requiring railroads to construct and keep in repair crossings over streets applies to a spur track leading to a manufacturing plant over a public thoroughfare and operated by the railroad company as a part of its system.—Davis v. Lewis, 288 Fed. 704.

Excessive Damages

The Texas Court of Civil Appeals holds that $40,000 for the loss of a foot by a railroad conductor was excessive and should be reduced to $25,000.—Wichita Falls & Fort Worth v. Combs (Tex. Civ. App.) 250 S. W. 714.

The Missouri Supreme Court holds that an award of $22,500, reduced by remittitur required by trial court to $15,000, for injuries to a brakeman while trying to uncouple cars, requiring amputation of the left leg, was excessive, and a further remittitur to $11,250 was required.—Foster v. Davis (Mo.) 252 S. W. 433.

Shipment Partially Loaded Not Delivered So as to Make Railroad Liable for Loss by Fire

Under the rule that there must be a complete delivery of the shipment before the carrier's strict liability as such begins, the Texas Court of Civil Appeals holds that where the agent of a shipper who wished to ship 57 bales of cotton from Memphis to Houston asked for two cars, was given one and told he should have another when that was loaded, filled the car given him with 35 bales, and left it without notifying the railroad, intending to load the other car next day, the railroad, which had issued no bill of lading for the shipment was not liable when the cotton loaded was damaged by fire that day.—F. W. & D. C. v. Tomson (Tex. Civ. App.) 250 S. W. 747.

Connecticut Highway Crossing Law

The Connecticut statute (Gen. St. 1918, Sections 3794, 3801) prescribes certain crossing signals, and provides that additional safeguards must be maintained at crossings where the railroad commissioner after due hearing so orders, but does not provide that compliance with the statute shall excuse the railroad company from taking other precautions, if the conditions so require. The federal district court of the Southern District of New York is of opinion that the later decisions of the Connecticut courts show that the law of Connecticut at the present time is that this statute is not exhaustive in its provisions, and so does not provide the only measure of care required of a railroad company in that state, so that, in a crossing accident case where the accident happened in Connecticut, it was a question of fact whether, under all the circumstances of the case, additional safeguards were required.—Elukowich v. New York, N. H. & H., 291 Fed. 574, setting aside verdict for defendant for erroneous charge to jury and ordering new trial.

Supreme Court of the United States

Commission Rightfully Forbids Discrimination Against Shippers on Independent Short Line

The Supreme Court has sustained the Interstate Commerce Commission in two cases, brought to set aside orders against carriers who were found to have unjustly discriminated against shippers of lumber situated on an independent short line. Carriers were ordered to desist from charging more than for services from other points within blanket territory. The questions of law were mainly the same. The federal district court for southern Mississippi perpetually enjoined the enforcement of an order in Swift Lumber Co. v. Fernwood & Gulf, 61 I. C. C. 485; and the federal court for Wyoming dismissed the bill (thus sustaining the order issued by the Commission) in Pioneer Lumber Co. v. Director General, 64 I. C. C. 485. Each case was brought up on direct appeal and they were argued together. The decree in the first case is reversed and that in the other sustained.—U. S. v. Illinois Central et al. Wyoming v. U. S. Decided January 7, 1924. Opinion by Justice Brandeis.

Collection of Taxes for Overvaluation Enjoined

The Supreme Court of the United States has affirmed the decree of the district court for Eastern Illinois granting the Illinois Southern and its receiver an injunction restraining the collection of taxes for 1917, 1918, 1919 and 1920 on the track and rolling stock. The railroad had paid the tax it admitted to be due. The injunction was sought for overvaluation, and because, if the excess taxes demanded were paid, they could only be recovered by a multiplicity of suits against the taxing bodies of the several counties (five in number) where the collections were made, and in any proceedings at law in these counties it would be impossible to secure a uniform or any adequate readjustment of the total valuation, which is made by a state board, so that plaintiffs had no adequate remedy at law and only equity could afford relief. The Supreme Court finds that the railroad would have no adequate remedy at law because, assuming that in each of the five counties before the tax could be collected a judgment must be obtained in the county court in a civil suit, not only would those suits be many, but there would be insuperable difficulty in determining what the proper assessment against the whole road should be and in apportioning the due share to the county concerned. This difficulty would recur in each of the five counties with not improbably different results in each.—Wilson v. Illinois Southern. Decided January 14, 1924. Opinion by Justice Holmes.

Bystander Employed in Emergency to Unload Freight

The Supreme Court of the United States holds that a person, not regularly employed by a railway company, but who, at the request of a train conductor, assisted the train men to unload a cutter, shipped in interstate commerce, following a long-standing practice of conductors to call on bystanders to assist in unloading heavy freight, occupied, for the time being, the relation of employee to the company, and was engaged in interstate commerce. The fact that the person so employed was part owner of the cutter was immaterial. Ob-

servance of the rule filed with the Interstate Commerce Commission requiring owners of heavy freight, under stated circumstances, to unload it, is required only to prevent discrimination among shippers. It has nothing to do with the interrelations of the carrier and its employees.

The action was for personal injuries sustained in assisting with the unloading, the plaintiff alleging that he was an employee of the company and both were engaged in intrastate commerce, and that the case was therefore governed by the state, and not the federal, Employers' Liability Act. The trial court submitted the case to the jury on the theory that the State and not the Federal law applied. Judgment upon a verdict for the plaintiff was affirmed by the Indiana Supreme Court, from which the railroad obtained certiorari, on which, for the reason stated, the United States Supreme Court has reversed the judgment of the court below.—B. & O. S. W. v. Burtch. Decided January 7, 1924. Opinion by Justice Sutherland.

Commission's Power to Issue Emergency Orders Interpreted

The Interstate Commerce Commission, purporting to act under the emergency power conferred on it by section 402 of the Transportation Act, 1920, to issue, in certain classes of cases, orders without notice or hearing, ordered the Peoria & Pekin Union to continue to exchange freight with the Minneapolis & St. Louis at Peoria. The order required the terminal company to switch freight cars tendered to it by or for the M. & St. L., a service it had threatened to discontinue because the payment demanded therefor had been refused. The P. & P. U. insisted that the Commission was without authority under its emergency power to require one carrier to switch cars for another, and sought in the federal court to enjoin the enforcement of the order. Injunction was denied and the company appealed direct to the Supreme Court of the United States.

The contentions mainly relied on by the government were that the order was one concerning car service under subparagraph b of paragraph 15, Section 15 of the Act to Regulate Commerce.

The Supreme Court finds that the argument that the Commission's authority over car service should be construed to include the requiring of switching rests upon paragraph 10 of amended Section 1 of the Act to Regulate Commerce. But "car service," the court says, connotes the use to which the vehicles of transportation are put; not the transportation service rendered by means of them. Cars and locomotives, like tracks and terminals, are the instrumentalities. To make these instrumentalities available in emergencies to a carrier other than the owner was the sole purpose of sub-paragraphs a, b and c, paragraph 15, Section 15. It is to this end only that provision is made by paragraph 10 for the "movement, distribution, exchange, interchange and return of locomotives, cars, and other vehicles used in the transportation of property." This is substantially the same expression as was used in the Esch Car Service Act. The 1920 Act merely adds locomotives and other vehicles.

"Transportation Act, 1920," the court says, "evinces, in many provisions, the intention of Congress to place upon the Commission the administrative duty of preventing interruptions in traffic. But there is no general grant of emergency power to that end; and the detail in which the subjects of such power have been specified precludes its extension to other subjects by implication. Moreover, switching service differs in character from those as to which such power is expressly granted. These involve either the use by one carrier of property of another or the direction of the manner and the means by which the service of transportation shall be performed. The switching order here in question compels performance of the primary duty to receive and transport cars of a connecting carrier. That courts may enforce such duties by a mandatory injunction, including a preliminary restraining order, has long been recognized. It may be that Congress refrained, for this reason, from conferring emergency power of this character upon the Commission." The decree denying the injunction was therefore reversed.—Peoria & Pekin Union v. United States. Decided January 7, 1924. Opinion by Justice Brandeis.

Labor News

Walter V. Hamilton, of Knoxville, Tenn., has been elected a vice-president of the Brotherhood of Railroad Trainmen succeeding M. J. Murphy, resigned. Mr. Hamilton has been general chairman of his brotherhood on the Southern Railway for 20 years.

Edwin P. Morrow, former governor of Kentucky, was sworn in as a member of the United States Railroad Labor Board in Chicago on January 16. Mr. Morrow, who is a member of the public group of the board, succeeds Judge R. M. Barton of Tennessee.

Labor Board Decisions

Change in Wage Increase Decision

The Railroad Labor Board has decided that decision No. 2049, which granted wage increases to maintenance of way employees on several roads, shall be amended by the elimination of the increase of two cents an hour for assistant bridge and building foremen on the Trinity & Brazos Valley and by the substitution in lieu thereof of an increase of two cents an hour for section, track and maintenance foremen and their assistants.—*Addendum No.* 1, *Decision No.* 2049.

Contracting of Freight Handling Work

In a dispute on the protest of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees against the contracting of freight handling work by the Lehigh Valley on its piers in New York and Brooklyn, the Labor Board has ordered that those employees who suffered a reduction in wages under such contracting shall be reimbursed for their losses; and has held that the contract is unlawful. The railway was directed to reinstate all employees involved in the dispute, with seniority rights unimpaired, upon advocation of the interested employees or their representatives.—*Decision No.* 2080.

Revision of Working Agreement

The Railroad Labor Board has ordered that representatives of the Pere Marquette and of the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees shall confer on or before January 7, 1924, for the purpose of revising the present agreement, dated February 1, 1922. Negotiations instituted by the employees on May 14, 1923, for the purpose of effecting a revision of the agreement in effect resulted in the management's refusal to change the agreement. The contention by the road was that the agreement entered into on February 1, 1922, was satisfactory when made and that circumstances have not changed so materially since that date as to warrant the drawing up of a new agreement. This contention was not upheld by the Labor Board.—*Decision No.* 2067.

Clover Leaf Telegraphers Case Reopened

The Labor Board has issued an order reopening Dockets 1319 and 2150, involving disputes between the Toledo, St. Louis & Western and the Order of Railroad Telegraphers. Both dockets, which involve disputes growing out of the abolition of express commissions and the abrogation of certain working rules were closed by decisions of the board, but since the Toledo, St. Louis & Western was consolidated with the New York, Chicago & St. Louis, the question has arisen as to the liability of the New York, Chicago & St. Louis to apply the decisions. The board ordered that negotiations be carried on between the railway and both the system and district representatives of the telegraphers with a view toward reaching an agreement covering questions of rules, rates of pay and express commissions. In the event that an agreement is not reached, the disputes are to be referred again to the Labor Board.—*Order in Docket* 1319, *Decision No.* 1367, *and Docket* 2150, *Decision No.* 1789.

Foreign Railway News

Beyer Peacock to Build Ljungström Turbines for Britain and Colonies

Beyer, Peacock & Co., Ltd., Gorton, Manchester, England, has, according to Modern Transport (London), completed arrangements with the Aktiebolaget Ljungström Angturbin of Stockholm, Sweden, for the manufacture in England of the Ljungström turbine locomotive for service in Great Britain and the British colonies. Beyer, Peacock will build one of these locomotives for purposes of demonstration on the British railways. The Ljungstrom company will shortly place one of these locomotives in service on the Argentine State Railways.

Privately Owned Railways Contemplated in Japan

Tokyo

In view of the heavy burden on the national treasury and its inability to put out capital liberally for the extension of the state railways the Department of Railways of Japan, which has been rumored for some time past to have departed from its traditional policy of nationalization, is giving charters to private capitalists and enterprisers for the construction of provincial lines. Recently Ichiji Yamanouchi, Minister of Railways, delivered a speech before a gathering of prefectural governors in regard to his construction policy. He said that the Government had decided to encourage private capital to invest in railways. Every help will be given to people who will build important provincial lines, not only in the way of easy grant of charters, but in the way of subsidies. If the government policy is actually carried out railways in Japan will again be favorite enterprises.

Route Selected for Trans-Sahara Railway

The French Ministry of Public Works has planned a tentative route for the proposed Trans-Sahara Railway. This line the French government proposes to build in order to bring its provinces south of the desert into direct communication with the Mediterranean and thus with France. The line will begin at an inland place called Wagadugu in French West Africa and extend northward across the desert to the Mediterranean port called Oran in Algeria. A short section of the line outside of Oran has already been constructed, but the route still to be built is over 2,000 miles in length. It is planned to operate the line by electricity. It is understood that the Paris, Lyons & Mediterranean Railway will operate the property on behalf of the government. The main interest in this line is strategic, since it will give direct communication with important colonies without exposing ships to dangers which might await them in the Atlantic ocean in time of war.

Railway Advertising in Great Britain

The British railways have lately made considerable advances in amount and variety of their advertising. Modern Transport (London) says:

"Only last week it was announced in these columns that the London Midland & Scottish Railway Company had entered into an agreement with prominent Royal Academicians (the best-known artists in the kingdom) for the portrayal of characteristic features of railway operation, as well as the delineation of beauty spots along the L. M. S. system. This is a noteworthy development which has been hailed with pleasure by all sections of the public and the press, but the fact that posters are already a well-established feature of railway publicity in this country robs it of the element of novelty. However, the L. M. S. has gone a step further. It has indulged in the very latest form of outdoor publicity—the pictorial electric sign. And 'Travel L. M. S.—the best way' is boldly flashed out before every passerby in Leicester Square when dusk has fallen, while, to gain his further attention, there is the big express locomotive whose wheels never cease to revolve and whose smokestack belches forth luminous steam and smoke."

The Spanish Railway Situation

The royal decree of October 21, 1923, providing for an investigation of the financial and physical conditions of all Spanish railroads enjoying government subsidies, has caused considerable discussion by the Spanish daily and financial press, according to Commercial Attaché Cunningham at Madrid. Conservative organs believe the decree was not the outcome of distrust of the railroads but of determination on the part of the government to learn the true condition of the roads with a view to properly and permanently improving their condition.

The immediate result of the investigation was a wholesale selling of railroad stocks on the exchanges. Prices on shares of two large companies went low but did not interfere with a dividend return of over 7 per cent. Railroad securities constitute about 25 per cent of the total handled on the exchanges, and are composed of broad-gauge railway shares valued at 770,000,000 pesetas (peseta equals 19.3 cents at par); obligations of those lines, 2,000,000,000 pesetas; and shares and obligations of narrow-gauge lines valued at 400,000,000 pesetas. The Financiero of Madrid announces that stocks of 25 leading railroads, amounting to 947,777,890 pesetas at par, have a market value of 667,223,176 pesetas.

Immediately after the government decreed the examination of accounts, the railroads called its attention to the fact that its temporary advances for purchase of materials and payment of wages and the provisional increase of 15 per cent in rates were to end November 11, 1923. Both were then ordered extended until January 1, 1924. The companies dropped their demand for advances to purchase materials, but asked the government to make a careful study of their needs and to authorize an increase of rates sufficient to take the place of the advances made heretofore.

The question at issue is whether the government shall continue making advances to the railroads for the purchase of equipment and payment of wages or whether increased rates shall be authorized. In either case a permanent policy seems likely to be adopted by the government. Three outstanding suggestions have been made looking toward a solution of the problem:

(1) The railroads of Spain, valued at over 4,000,000,000 pesetas, could be controlled by the government if it would invest about 400,000,000 pesetas, according to the Financiero. The government could then let the railroads to the organizations making the best offers; this would place them on a profitable basis.

(2) A similar plan proposed that the railroads should yield a profit to the state and be operated under the financial responsibility of the companies. The government would approve tariffs with a view to providing revenue to meet operating and fixed charges and reasonable dividends. The government would also cause the tariffs to be changed from time to time when necessary, and would guarantee against losses not due to poor administration. A supreme railway commission, which would be composed of delegates of the interested company and other companies, appointed with the government's approval, would examine the accounts of each company when it was deemed advisable. The companies would be required to raise capital for extensions and for purchase of rolling stock and other material essential to efficient operation. This plan was proposed to the Spanish Parliament about a year ago but failed; however, it has been mentioned more than any other as a substitute for present conditions, and may be utilized to a large extent in the final arrangement.

(3) The extension by 40 or 50 years of the time in which companies may operate the railroads before ownership reverts to the government has been suggested by the acting minister of finance. According to the original contracts providing for construction and operation by the companies, some of the roads will revert to the government at the end of about 50 years. The companies do not feel that this period of retention will be long enough to justify extensive expenditures for improvements or extensions to the properties. Consequently the roads have been permitted to fall into decay, and nothing is being done to maintain permanently the right of way. It is believed that if the time remaining for exploitation is extended to 99 years or more the companies will be able to amortize needed investments and operate profitably with present earnings. Furthermore, the rates would not have to

be raised and the treasury would not be called upon for further advances.

The leading railroads would earn large profits under an increase of 10 per cent in rates, while others would require an increase of 25 per cent in order to meet expenses. The gross earnings of two leading railroads increased about 5 per cent during the first 11 months of 1923 over the corresponding period of 1922. While current reports show some improvements, the most profitable railroads do not show sufficient earnings to meet fixed charges.

Knighthood for Arthur Watson, General Manager of the London, Midland & Scottish

Arthur Watson, C.B.E., general manager of the London, Midland & Scottish Railway has, it is officially reported, received the honor of knighthood. Sir Arthur Watson, the recipient of this honor, is widely known in Europe and also in Canada and the United States. Born in Manchester, 1873, he was educated at the Manchester Grammar School and the Victoria University. After being articled to the chief engineer of the former Lancashire & Yorkshire Railway, he filled a number of important positions from 1893 until 1911 when he was appointed superintendent of the line. In 1918, he was appointed assistant general manager in combination with the position of superintendent of the line and in January, 1919, he became general manager of the Lancashire & Yorkshire System. When this company was amalgamated with the London & North Western on January 1, 1922, he became general manager of the enlarged London & North Western; since January 1, 1923, he has held the chief executive position on the London, Midland & Scottish Railway. The London, Midland & Scottish Railway is now well known as the largest railway company in Great Britain. It has a length of 6,964 miles, a share and loan capital of £398,929,175; and weekly traffic receipts of about £1,500,000.

Sir Arthur Watson

R. C. Irwin, formerly secretary of the London & North Western Railway, who had previously held the position of secretary on the Lancashire & Yorkshire Railway, is now holding the secretaryship of the London, Midland & Scottish, formed by the amalgamation of those companies with several others. Mr. Irwin was born at Carlisle in 1865 and entered the service of the Lancashire & Yorkshire in 1881, holding a position in the office of the secretary. Five years later he was appointed to a position in the freight department of the L. & Y. In 1889 he returned to the secretary's office and shortly afterwards became chief clerk to the secretary. In 1899 he became secretary of the company. Since January 1, 1923, he has held the position of secretary to the London, Midland & Scottish, which includes railways formerly known as London & North Western, Midland, Lancashire & Yorkshire, Caledonian and Highland; the merger also includes several other railways and subsidiary lines.

R. C. Irwin

Equipment and Supplies

Locomotives

THE KANSAS CITY SOUTHERN is inquiring for 1 locomotive tender.

THE NORFOLK & WESTERN is inquiring for 10 locomotive tenders.

THE MAINE CENTRAL is inquiring for 2 Pacific type and 6 Mikado type locomotives.

THE ATLANTIC COAST LINE is inquiring for 20 Pacific type and 5 switching type locomotives.

THE INTERNATIONAL-GREAT NORTHERN contemplates coming into the market soon for 5 locomotives.

THE YOSEMITE VALLEY has ordered 1 Mogul type locomotive from the American Locomotive Company.

THE MADRAS & SOUTHERN MAHRATTA OF INDIA has ordered 2 Mikado type and 2 Pacific type locomotives from the Baldwin Locomotive Works.

Freight Cars

THE CENTRAL OF BRAZIL is inquiring for 100 freight cars.

THE INTEROCEANIC RAILWAY OF MEXICO is inquiring for 4 tank cars.

THE CENTRAL STEEL COMPANY is inquiring for 12 low side gondola cars.

THE OLIVER IRON MINING COMPANY is inquiring for 25 stripping cars of 30 cu. yd. capacity.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS is inquiring for 50 or more 55-ton all steel hopper ballast cars.

THE NEW YORK, ONTARIO & WESTERN contemplates building about 15 caboose cars at its Middletown shops.

THE MAINE CENTRAL is inquiring for 100 general service gondola cars and 250 single sheathed box cars.

THE PACIFIC COAST RAILROAD has ordered 15 general service cars from the Pacific Car & Foundry Company.

THE LANDRETH GASOLINE COMPANY, Breckenridge, Tex., has ordered 50, 40-ton, 8,000 gal. capacity tank cars from the General American Tank Car Corporation.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 2,000 refrigerator cars, 500, 50-ton gondola cars, 500, 40-ton flat cars, 500, 40-ton automobile cars, 500, 40-ton stock cars and 1,000 40-ton box cars.

THE CHILE EXPLORATION COMPANY, New York, reported in the *Railway Age* of December 8 as inquiring for 80 gondola cars of 70 tons' capacity, has ordered 80 ore cars of 70 tons' capacity from the Pressed Steel Car Company.

THE SEABOARD AIR LINE, reported in the *Railway Age* of January 5 as asking for prices for the rebuilding of 300 steel phosphate cars, has given a contract to the Tampa Dry Dock Company, which is located in Tampa, Florida, for the repair of these cars.

THE PHILADELPHIA & READING, reported in the *Railway Age* of December 1 as inquiring for 1,000 hopper cars of 70 tons' capacity, has ordered 400 steel hopper coal cars of 70 tons' capacity, from the Pressed Steel Car Company, 200 from the Standard Steel Car Company, 200 from the Cambria Steel Company and 200 from the American Car & Foundry Co.

Passenger Cars

THE NORTH CAMBRIA RAILWAY, Pennsylvania, is inquiring for 2 one-man electric cars.

THE MAINE CENTRAL is inquiring for 4 baggage and mail cars, 6 coaches and 3 smoking cars.

THE INTERNATIONAL-GREAT NORTHERN is inquiring for 3 coaches, 2 chair cars, 1 baggage and mail car and 4 baggage cars.

THE NEW YORK, NEW HAVEN & HARTFORD contemplates letting a contract soon for the construction of 10 gasoline passenger motor cars.

THE MISSOURI PACIFIC has ordered 3 "Model 55" combination passenger and baggage gasoline cars from the J. G. Brill Company, Philadelphia.

THE GREAT NORTHERN, reported in the *Railway Age* of January 12, as inquiring for eight dining cars, has ordered this equipment from the Pullman Company.

THE CANADIAN NATIONAL has ordered 10 first-class coaches, 10 second-class coaches, 2 observation compartment cars and 2 special compartment cars from the Canadian Car & Foundry Co.

THE NEW YORK CENTRAL, reported in the *Railway Age* of January 19 as asking for prices on February 6 for passenger cars, is now inquiring for about 50 coaches, some passenger and baggage cars and some dining cars.

THE CHICAGO, BURLINGTON & QUINCY, reported in the *Railway Age* of January 5 as inquiring for 6 dining cars, has ordered this equipment from the Pullman Company and is inquiring for 25 baggage cars and 5 mail cars.

THE CENTRAL OF GEORGIA, reported in the *Railway Age* of December 22 as inquiring for four end-partition and two middle-partition smoking cars, four postal and baggage cars, three baggage and express cars, and two baggage and passenger cars, has ordered this equipment from the Pullman Company.

Iron and Steel

THE MINNEAPOLIS & ST. LOUIS has ordered 5,000 tons of rail from the Inland Steel Company.

Track Specialties

THE PERE MARQUETTE, which has been in the market for 1,500 tons of tie plates has decided not to buy this material.

THE NORTHERN PACIFIC, THE WABASH, THE MISSOURI PACIFIC and THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE are expected to place orders this week for 6,000 tons, 3,000 tons, 11,000 tons and 3,500 tons of tie plates respectively.

Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, February 8, for five, 16-car capacity steel car floats.

THE GREAT NORTHERN is inquiring for 1 steam operated locomotive crane of 30 tons' capacity at a 15-ft. radius, or 20-ton at a 22-ft. radius; to have a 50-ft. boom, be self-propelling at a speed of 15 miles an hour, to be built on a steel underframe 8-wheel car and equipped with an enclosed cab.

THE BUFFALO, ROCHESTER & PITTSBURGH has ordered from S. F. Bowser & Company, Inc., Fort Wayne, Ind., tanks and equipment for the construction of an oil supply car to be used for the distribution of oil. The Virginian has also ordered similar equipment and also a 12,000-gal. cylindrical storage tank with a 5-gal. self-measuring pump for the handling of kerosene in tank car lots. The New York Central has ordered from this company four special 280-gal. tanks with self-measuring pumps for the handling of oil paint at Grand Central Station, New York.

Supply Trade News

A. R. Eitzen, engineer of **The Stroebel Steel Construction Company,** has been promoted to chief engineer, succeeding T. R. Rall, deceased.

S. W. Buckner has been appointed eastern representative of the **Lumberjack Company,** Portland, Ore., manufacturers of lumber for railroads, with headquarters at Room 802, 6 N. Michigan avenue, Chicago.

E. C. Temple, formerly associated with the Western Equipment Company, has been appointed General Sales Manager of **A. H. Talbot & Company,** dealers in railway and contractors' equipment, with headquarters at Chicago.

F. O. Brazier, manager eastern railway sales of the **Murphy Varnish Company,** has been made general manager of railway sales for that company, with headquarters in Newark, N. J.

F. O. Brazier

Mr. Brazier was born in Boston, Mass. After graduating from the high school at Fitchburg, Mass., he entered the service of the mechanical department of the Fitchburg Railroad, where he remained for about six years. Following this he was for three years in the mechanical department of the Illinois Central, after which he entered the sales department of the Lappin Brake Shoe Company, which was later absorbed by the American Brake Shoe & Foundry Company. He became associated with the railway sales department of the Murphy Varnish Company almost 22 years ago, since which time he has been continuously with that company. For the first six years of this period he made his headquarters at Chicago, later coming to New York. He was made manager of eastern railway sales about three years ago. Mr. Brazier is a son of F. W. Brazier, who for so many years was at the head of car department of New York Central.

G. E. Taylor has been appointed district manager of the **Chain Belt Company,** Milwaukee, Wis., with headquarters at San Francisco, Cal., and **J. V. McDonald** has been appointed district manager with headquarters at Los Angeles, Cal.

Edgar M. Smith, Richard J. McComb, James L. Terry and **Lester T. Burwell** have been elected vice-presidents of **The Q and C Company,** New York, and **E. Ray Packer,** vice-president in charge of manufacturing; all with headquarters at New York.

W. G. Andrews of the sales department of **Pratt & Lambert, Inc.,** Buffalo, N. Y., has been appointed sales manager of the central division and has taken over the work formerly handled by **J. H. Waterbury,** deceased; Mr. Andrews is also a director of the company; **J. C. Roth,** sales representative, has been appointed assistant sales manager of the central division; **W. R. Fuller,** manager of industrial sales, has been appointed technical director, in charge of all technical work; **T. E. Murphy,** formerly in charge of the railway department, central division, has been promoted to assistant manager of industrial sales; **J. G. Schroeder,** assistant resident manager at Chicago, has been appointed sales manager of the western division and **H. S. Campbell,** who was sales representative, is now manager of industrial sales of the western division.

L. P. Duggan, who for many years represented the **Garlock Packing Company,** Palmyra, N. Y., covering the railroads in

the Middle and South Atlantic states, and of late packing representative for the United States Rubber Company, has recently resumed his affiliations with the Garlock organization. His headquarters are at the Garlock sales branch, 1211-17 Arch street, Philadelphia, Pa. **R. J. Hinkle,** former railroad representative of the Garlock Packing Company out of its Philadelphia sales branch, will now cover the railroads in the mid-west territory with headquarters at the Chicago branch, 326 West Madison street.

Crawford McGinnis has been appointed vice-president of **The Pyle-National Company,** Chicago; **L. H. Vilas** has been appointed assistant general manager and **George E. Haas** has been appointed special representative. Crawford McGinnis was born in Oakland City, Ind., in 1880. He received a common school education in the western states and served his apprenticeship as a machinist on the St. Louis-San Francisco. He followed railroad work, with the exception of a short time at sea, specializing in the air brake. His earlier experiences were in Mexico and Central America. Mr. McGinnis left the service of the Minneapolis, St. Paul & Sault Ste. Marie in 1912, to represent the Pyle-National Company. Lawrence H. Vilas was born in New York City in 1895. He received his education at St. Paul's School, Concord, N. H., and shortly after leaving school he enlisted in the New York National Guard and served overseas in France in the World War. After the close of the war he took up work with the Pyle-National Company. George E. Haas was born at Wadsworth, Nev., in 1883, and was educated in the schools of California and Minnesota. After serving a two-year apprenticeship with the Milwaukee Electric Company, he completed a full machinist's apprenticeship in the shops of the Chicago, Milwaukee & St. Paul, at Milwaukee. He is familiar with railroad development, having specialized in air brakes and electric equipment.

Obituary

Edwin A. Hall, assistant secretary and treasurer and assistant to the president of the Standard Stoker Company, Inc., died at Scarsdale, N. Y., on January 20. Mr. Hall's headquarters were at the New York office, Grand Central Terminal.

Trade Publications

River Bank Protection.—The Woods Brothers Construction Company, Lincoln, Nebr., has issued two booklets of 12 and 36 pages describing its system of current retards for the protection of banks along small streams and large rivers, respectively. These books describe in detail the manner of construction of the current retards built by this company and are elaborately illustrated with photographs showing the manner of placing these retards and the improvements effected.

Locomotive Cranes.—The Brown Hoisting Machinery Company, Cleveland, Ohio, has issued a second edition of its booklet No. 10, entitled "Man Power Multiplied," describing and illustrating this company's No. 2 locomotive crane. The booklet, which is more complete than the first edition, enumerates various details of the crane and devotes considerable space to developing the various uses to which it is adapted. The majority of the illustrations show the crane in actual use on various kinds of work, while the remainder of the illustrations, which include a number of line drawings, have reference chiefly to showing the working parts and the dimensions. Full specifications covering the crane are included in the booklet, which comprises 20 pages.

Engine Tender Connections.—An attractively prepared catalogue, No. 42, has been issued by the Barco Manufacturing Company, Chicago, illustrating the Type 3-V engine tender connections for steam, air, oil and water, manufactured by this company. The catalogue points out the importance of reliability, efficient delivery of fluid, and freedom from roundhouse and shop maintenance in equipment of this kind, and on page 2 gives the results of exhaustive service tests of Barco connections compared to those of other types. Three charts are included, affording comparative data regarding the loss of pressure through various sizes of piping and types of connections between engine and tender. Drawings and instructions for the application of Barco Type 3-V connections are also shown in the catalogue.

Railway Construction

Atchison, Topeka & Santa Fe.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from Marland, Okla., into the Tonkawa oil fields, 9.6 miles.

Atchison, Topeka & Santa Fe.—This company is calling for bids for the construction of an eating house at Las Vegas, N. M.

Baltimore & Ohio.—This company has awarded a contract to the American Bridge Company covering the fabrication and delivery of steel work for superstructures of several bridges on its Monongah and Pittsburgh divisions. The work consists of through and deck plate girder spans of varying lengths, and a total weight of about 600 tons. This road has also awarded a contract to the Jobson-Gifford Company, New York, for the erection of two 105-ft. plate girder spans at Jerome Jct., Pa., with the Pittsburgh Construction Company for the erection, concreting and waterproofing of a grade crossing elimination structure at Feltonville, Pa.; and with the Seaboard Construction Company for the erection of new spans and the shifting of old spans in the Cheat river bridge at Point Marion, Pa. The total quantity of steel work involved in the three erection contracts is approximately 400 tons.

Chicago, North Shore & Milwaukee (Electric).—This company has applied to the Illinois Commerce Commission for permission to relocate its tracks through Wilmette, Ill., a suburb of Chicago, to eliminate several curves. If the permission is granted the work is expected to start about March 1.

Chicago & North Western.—This company plans the construction of extensive additions to its classification yard and car repair terminal at Proviso, Ill. Development of this project will extend over a period of 10 years.

Chicago, Rock Island & Pacific.—This company is calling for bids for the remodeling of its passenger station at El Dorado, Ark.

Detroit, Toledo & Ironton.—This company plans the construction of a new passenger station at Adrian, Mich.

Great Northern.—This company, together with the Northern Pacific, has been ordered by the city council of Minneapolis, Minn., to raise its tracks and separate grade from Johnston street, N. E., to 27th avenue, Minneapolis, a distance of over two miles. The total cost of the program will be approximately $5,000,000, of which $1,000,000 will be spent in 1924. According to the plans, the tracks will be elevated an average of 11 ft. and the streets depressed 9 ft., the streets being spanned by concrete and steel viaducts. The Great Northern will this year separate grade at Monroe street and 19th avenue, N. E., the cost of which is estimated at $700,000. The Northern Pacific will separate the grades at 18th and 19th avenues, N. E., and Monroe street, at a cost of approximately $300,000. Contracts for the construction are to be let early in the spring.

Great Northern.—This company has awarded a contract to A. Guthrie & Company, Chicago, for the construction of seven miles of second track from Troy, Mont., to Kootenai Falls.

Gulf Coast Lines.—This company has awarded a contract to J. E. Walsh, Mission, Tex., for the construction of a brick passenger station at Mercedes, Tex., at a cost of $25,000, as reported in the *Railway Age* of November 24.

Hagan Coal Company.—This company has awarded a contract to John Dooley, Santa Fe, New Mexico, for the construction of a 13-mile spur track from San Felipe, New Mexico, to the Hagan coal mine at a cost of approximately $300,000.

Illinois Central.—This company closed bids on January 24 for the construction of an interlocking plant at Champaign, Ill.

Louisville & Nashville.—This company is reported to have awarded a contract to Doullut & Williams, Inc., New Orleans,

La., for the construction of a freight station at New Orleans at an estimated cost of $500,000.

MISSOURI-KANSAS-TEXAS.—This company is calling for bids for the construction of a seven-story concrete warehouse, 100 ft. by 200 ft., at Dallas, Tex.

MISSOURI PACIFIC.—This company contemplates the construction of an extension from Bagnell, Miller county, Missouri, to Springfield, Mo., a distance of 125 miles. Conferences have been held with residents along the proposed route and the matter will be taken up at the next meeting of the board of directors, according to an announcement by President Baldwin.

NORTHERN PACIFIC.—Separation of grade at Minneapolis, Minn. See Great Northern.

OKLAHOMA UNION.—This company plans the construction of a car repair shop and a power house at Tulsa, Okla.

OREGON-WASHINGTON RAILROAD AND NAVIGATION COMPANY.—This company will begin within sixty days the construction of an extension from Milton, Ore., to Umapine, reported in the *Railway Age* of December 15.

OREGON-WASHINGTON RAILROAD & NAVIGATION COMPANY.—This company has applied to the Interstate Commerce Commission for authority for the construction and operation of a 3-mile line in Umatilla county, Ore., as a branch to the village of Umapine. The commission has issued a certificate for the construction of a branch line from Crane to Burns, Ore., 30 miles, to connect with the Oregon Short Line.

PHILADELPHIA & READING.—This company has awarded a contract to the James McGraw Company, Philadelphia, for the grading in connection with a change in alinement of its main line south of Port Clinton, Pa. The work will be along and adjacent to the northbound main track beginning at the junction of the north and southbound main tracks, north of Hamburg, and extending to Port Clinton station, a distance of approximately one and one-half miles.

The plans contemplate changing the channel of the Schuylkill river, the realinement of the railroad, and the widening of the roadbed to provide for the southbound main track which will then be removed from a tunnel at that place. This work will require an excavation of approximately 330,000 cu. yd. Upon completion of the contract two river bridges and Pulpit Rock tunnel will be abandoned. About two years will be required to complete this work.

SNOW HILL.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a line from Hookerton to Snow Hill, N. C. J. T. Hagans, of Tarboro, N. C., is general counsel of the company.

SOUTHERN.—This company is calling for bids for the construction of a one-story mill building, 80 ft. by 200 ft., at Princeton, Ind.

UNION PACIFIC.—This company has awarded a contract to the Roberts & Schaefer Company, Chicago, for the construction of a 150-ton, three track, shallow pit type coaling station and sanding plant at Orchard, Idaho.

"THE EMPLOYEES' MAGAZINE—Its Duties and Opportunities," is the title of a 12-page pamphlet just published by the National Safety Council, 168 North Michigan avenue, Chicago. It outlines the aims and purposes of the employees' magazine and describes many methods by which the magazine can be made invaluable to an industrial organization in establishing harmonious industrial relations, encouraging thrift and promoting safety and health.

D. W. PONTIUS, general manager of the Pacific Electric, in a letter addressed to chambers of commerce, planning commissions, industrial boards and civic organizations in southern California, calls attention to the serious disadvantages of the practice of opening streets parallel and adjacent to railway tracks. Mr. Pontius suggests that it would be more desirable to lay out these streets 150 ft. away, so that the rear ends of the lots would abut the tracks. Streets along the tracks are also a hindrance in the separation of grades at crossings and in furnishing industries with side tracks.

Railway Financial News

ANN ARBOR.—*Authorized to Issue Equipment Trusts.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $1,092,000 of equipment trust certificates.

A syndicate composed of Freeman & Co., J. S. Bache & Co. and Stroud & Co., is offering $840,000 Ann Arbor series A 6 per cent equipment trust certificates due July 1, 1924, to January 1, 1934, at prices to yield 6 per cent for 1926 and later maturities, 5.75 per cent for January 1, 1925, maturity and 5.50 per cent for July 1, 1924, maturity. The certificates will be issued under the Philadelphia plan and will cover 500 new steel box cars costing $1,125,000.

BELT RAILWAY OF CHICAGO.—*Asks Authority for Approval of Lease.*—This company has applied to the Interstate Commerce Commission for approval of the execution of a lease between that company and the Chicago & Western Indiana, the Belt division of which is operated by the Belt Railway of Chicago, and also the assumption of liability as lessee in respect of certain securities issued by the Western Indiana.

BUFFALO CREEK.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $1,000,000 of first refunding mortgage 5 per cent gold bonds under its mortgage of December 31, 1910, the proceeds to be used for additions and betterments. The terms on which they are proposed to be issued are still under negotiation.

CANADIAN NATIONAL.—$50,000,000 *Loan.*—A Canadian syndicate composed of the Dominion Securities Corporation, A. E. Ames & Co., Wood, Gundy & Co., the National City Company (of Canada), and Harris, Forbes & Co. (of Canada), the Bank of Montreal, the Royal Bank of Canada and the Dominion Bank, was awarded the $50,000,000 Canadian National 30-year 5 per cent bond issue at 97.813 in Canadian funds. Four syndicate groups—two American and two Canadian, bid for the debenture issue. The high bid by an American syndicate was 94.13, made by the Dillon, Read & Co. group.

In making the award to the Canadian group in preference to the high American bidder it was explained that the operation of paying interest and principal in New York funds would impose a liability lasting thirty years over the Canadian foreign exchange market, which would neutralize the advantage of a higher price for the bonds.

CHICAGO & EASTERN ILLINOIS.—*Authorized to Pledge Bonds.*—The Interstate Commerce Commission has authorized this company to pledge and repledge $2,605,300 of prior lien mortgage 5½ per cent bonds as collateral for short term notes and to sell the bonds at any time up to December 31, 1924 at not less than 95.

CHICAGO, MILWAUKEE & ST. PAUL.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $14,000,000 of 10-year 6 per cent first mortgage bonds, gold loan of 1924, and to pledge as collateral therefor $20,000,000 of general mortgage 5 per cent gold bonds. The proceeds are to be used to repay a loan of $7,000,000 from Kuhn, Loeb & Co., and the National City Bank, that are to purchase the bonds at 92¼ and interest, and to complete the program of additions and betterments.

COLORADO, WYOMING & EASTERN.—*Foreclosure Sale.*—All property of this company will be sold at Laramie, Wyo., on February 4 under a decree of foreclosure ordered by the federal court at Cheyenne, in proceedings instituted by the Equitable Trust Company of New York and Lyman Rhoades, trustee. The Colorado, Wyoming & Eastern runs from Laramie, Wyo., to Coalmont, Colo., a distance of 111 miles.

LEHIGH VALLEY.—*Rights.*—The stockholders of record March 15 will be offered the right to subscribe to shares of interest in the Lehigh Valley Coal Company and will have until April 15 to exercise the right. After that date unsold shares of interest will be sold to the coal company.

The New York Curb Market Association has admitted to trad-

ing Lehigh Valley Railroad Company rights to subscribe to certificates for share of interest in the stock of the Lehigh Valley Coal Company and certificates for 1,212,160 shares of interest in the stock of the Lehigh Valley Coal Company, both securities when, as and if issued.

MINNEAPOLIS & ST. LOUIS.—*Government Files Claim.*—The Wall Street Journal states that the federal government has filed a claim with Howard S. Abbott, United States Master in Chancery, against this company asking for recognition of the road's obligation to the government of $3,411,873.51 with 6 per cent interest, as a prior claim. The claim consists of five promissory notes, most of them incurred as a result of federal control of railroads. One note for $1,382,000, dated April 1, 1921, represents a loan under the Transportation Act. The claim is one of 3,500 filed since W. H. Bremmer was appointed receiver for the company.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Exchange Offer to Stockholders.*—See Wisconsin Central.

MONONGAHELA.—*Authorized to Issue Bonds.*—This company has been authorized to issue $2,650,000 of first and refunding mortgage 5 per cent gold bonds to be pledged as collateral for notes to be issued to the director general of railroads.

NEW ORLEANS, TEXAS & MEXICO.—*Stock Increase and Stock Dividend.*—A special meeting of stockholders has been called for February 4, at New Orleans, to vote on the proposal to increase the authorized capital stock to $25,000,000 from $15,000,000, subject to the approval of the Commerce Commission, and to issue $1,500,000 of the increased stock as a stock dividend. This stock dividend will amount to 10 per cent on the outstanding stock. It is also proposed, in order to provide for the refunding of the outstanding first mortgage bonds of 1925, and to enable the company to finance future capital requirements, to authorize a new mortgage to secure an issue of bonds not exceeding $50,000,000 to be issued bearing rate of interest as directors may determine. Of these bonds, it is proposed that not more than $7,500,000 will be issued or reserved to refund outstanding first mortgage bonds and for other corporate purposes. A total not exceeding $13,500,000 will be issued or reserved to refund a like amount of the 5 per cent income bonds. The remainder will be issuable for the acquisition of new properties and for additions and betterments.

NEW YORK CENTRAL.—*New Director.*—Jackson E. Reynolds has been elected a director to succeed Walter P. Bliss, deceased.

NEW YORK, NEW HAVEN & HARTFORD.—This company, as lessee of the Old Colony Railroad has applied to the Department of Public Utilities of Massachusetts for permission to issue $3,500,000 5½ per cent mortgage bonds. The proceeds would be used to refund $3,000,000 4 per cent debentures of Old Colony maturing February 1 and for permanent improvements.

NORFOLK & WESTERN.—*Equipment Trusts Offered.*—Redmond & Co., First National Bank of New York, Harris, Forbes & Co., Equitable Trust Company of New York and Freeman & Co. are offering at prices to yield 4.50 per cent to 4.95 per cent, according to maturity, $7,200,000 4½ per cent equipment trust certificates, series 1923, maturing $800,000 annually February 1, 1925 to 1933.

NORTHERN COLORADO & EASTERN.—*Asks Authority to Acquire Line.*—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the property of the Colorado, Wyoming & Eastern, extending from Coalmont, Colo., to Laramie, Wyo., 112 miles, and to issue for the purpose of $974,000 of 6 per cent preferred stock, $550,000 of 6 per cent prior lien bonds and 25,000 shares of no par common stock.

OKLAHOMA CITY-ADA-ATOKA.—*Authorized to Acquire Line.*—This company has been authorized by the Interstate Commerce Commission to acquire and operate a line from Shawnee to North Coalgate, Okla., about 77 miles, now being operated by the receiver of the Missouri, Kansas & Texas.

OKLAHOMA CITY-SHAWNEE INTERURBAN.—*Authorized to Acquire Line.*—This company has been authorized by the Interstate Commerce Commission to acquire and operate a line from Oklahoma City to Shawnee, Okla., 38 miles, which is now being operated by the receiver of the Missouri, Kansas & Texas.

PENNSYLVANIA.—*Western N. Y. & Pa. Bonds.*—This company has issued the following notice to the holders of Western New York & Pennsylvania income bonds due April 1, 1943:

> The Pennsylvania Railroad Company offers to purchase the income bonds held by you at $375 per $1,000 bond, with all coupons attached, and will pay in exchange thereof Western New York & Pennsylvania general mortgage 4 per cent bonds, due April 1, 1943, rated at $750 per $1,000 bond, and accrued interest. Interest on the latter bonds is payable in April and October of each year, and has always been paid, whereas the Western New York & Pennsylvania Railway has not been able to declare any interest payable on the income bonds since their issue.

Purchase on this above basis will be made at the office of the company in Philadelphia.

VIRGINIAN AND VIRGINIAN TERMINAL.—*Authorized to Issue Bonds.*—The Virginian Terminal has been authorized to issue $1,796,999 of 5 per cent first mortgage 50-year gold bonds to be delivered to the Virginian in reimbursement of advances. The Virginian has also been authorized to guarantee the bonds, to have authenticated and delivered $3,416,000 of its 5 per cent first mortgage bonds, and to sell $5,000,000 of such bonds, including some now in the treasury at not less than 91.

VISALIA ELECTRIC.—*Asks Authority to Acquire Line.*—This company has applied to the Interstate Commerce Commission for authority to acquire and operate the line of the Chowchilla Pacific, 11.68 miles.

WESTERN NEW YORK & PENNSYLVANIA.—*Bonds.*—See Pennsylvania.

WISCONSIN CENTRAL.—*Soo Exchange Offer to Stockholders.*—A letter has been sent to the minority stockholders offering them $43.25 in 25-year 5½ per cent collateral trust notes of the Minneapolis, St. Paul & Sault Ste. Marie for each share of common stock they now hold. The agreement is conditioned upon the deposit, on or before March 1, 1924, of a sufficient amount of stock. The company may extend time for deposit to April 1. They are to be made with the Bankers Trust Company or the Minneapolis Trust Company. The notes of the Soo lines are to be dated March 1, 1924, and application will be made to list them on the New York Stock Exchange. A sinking fund to retire them will be operative from 1930. The Minneapolis Trust Company will hold the Wisconsin Central stock to secure the notes.

Dividends Declared

Chicago & Western Indiana.—1½ per cent, quarterly, payable January 8.

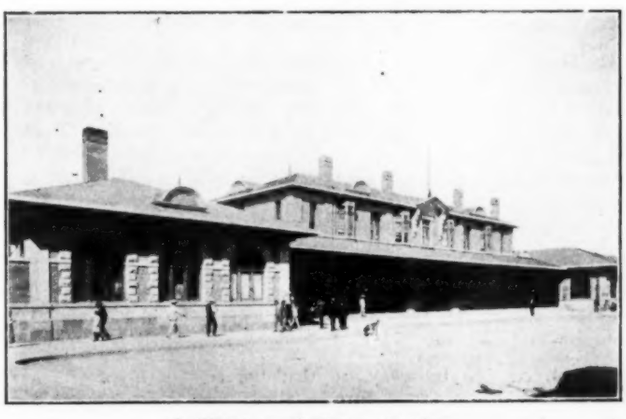
Mahoning Coal Railroad.—Common, $10, payable February 1 to holders of record January 28.

Norfolk & Western.—Common, $1.75, quarterly, payable March 19 to holders of record February 29.

Pullman Company.—$2, quarterly, payable February 15 to holders of record January 31.

Trend of Railway Stock and Bond Prices

	Jan. 22	Last Week	Last Year
Average price of 20 representative railway stocks	61.71	61.36	64.68
Average price of 20 representative railway bonds	83.50	83.90	84.24



A Mexican Railway Station

Railway Officers

Executive

Clayton E. Hildum, whose election as a vice-president of the Lehigh Valley with headquarters at New York, was announced in the *Railway Age* of January 19, page 266, was born at Jamestown, N. Y., and was graduated from Wittenberg College, Springfield, Ohio, in June, 1897. He entered railway service as a clerk in the accounting department of the Erie on March 1, 1898. In 1905, he was appointed traveling auditor and on April 15, 1909, chief clerk to the auditor of disbursements. On July 1, 1911, he was promoted to auditor of disbursements and in January, 1913, he became auditor of freight accounts. He was appointed manager of the accounting section of the United States Railroad Administration on July 15, 1918, and in February, 1920, Mr. Hildum was appointed controller of the Lehigh Valley. He will continue in this capacity together with his duties as vice-president.

C. E. Hildum

Financial, Legal and Accounting

W. S. Ledbetter has been appointed general accountant in charge of disbursements accounting of the Missouri & North Arkansas, with headquarters at Harrison, Ark.

W. E. Brown has been appointed treasurer of the Cowlitz, Chehalis & Cascade, with headquarters at Chehalis, Wash., in addition to his duties as president and general manager. **M. B. McBride,** auditor with headquarters at Chehalis, has been appointed assistant treasurer, with the same headquarters.

Operating

W. F. Hayes has been appointed general supervisor of time service of the Union Pacific and the St. Joseph & Grand Island, with headquarters at Omaha, Nebr.

D. B. Rose, assistant superintendent of transportation of the Alaska Railroad, with headquarters at Anchorage, Alaska, has resigned and the office of assistant superintendent of transportation has been abolished.

H. D. Pollard, general superintendent of the Central of Georgia, with headquarters at Savannah, Ga., has been appointed general manager, a newly created position, with the same headquarters. The position of general superintendent has been abolished.

W. E. Smith, whose promotion to assistant general manager of the Louisville & Nashville, with headquarters at Louisville, Ky., was reported in the *Railway Age* of January 5, was born on September 13, 1868, at Georgetown, Ga. He entered railway service in June, 1881, as a water boy on the Louisville & Nashville, being subsequently promoted to messenger and assistant agent. In 1885 Mr. Smith was employed as a section laborer and two years later was promoted to section foreman. In 1888 he was promoted to clerk in the roadmaster's office and a year later was again appointed section foreman. He was promoted to supervisor of construction in 1890, and in 1891 was promoted to track supervisor. Mr. Smith was promoted to roadmaster in 1895 and he continued in this position until 1905, when he was promoted to assistant division superintendent. In 1912 he was promoted to superintendent of construction and in 1915 was promoted to division superintendent, with headquarters at Birmingham, Ala. He continued in this capacity until his recent promotion to assistant general manager.

D. J. Swope, superintendent of the Toledo-Ludington division of the Pere Marquette, with headquarters at Saginaw, Mich., has been transferred to the Detroit-Canadian division, with headquarters at Detroit, Mich., succeeding J. J. Corcoran, who has resigned to engage in other business. **W. H. Wallace,** superintendent of the Port Huron-Grand Rapids division, with headquarters at Saginaw, has been transferred to the Toledo-Ludington division, succeeding Mr. Swope. **J. A. Grigware,** assistant superintendent of the Detroit-Canadian division, with headquarters at Detroit, has been promoted to superintendent of the Port Huron-Grand Rapids division, succeeding Mr. Wallace.

James G. Metcalfe, whose appointment as superintendent of the Kentucky division of the Louisville & Nashville with headquarters at Paris, Ky., was announced in the *Railway Age* of January 5, page 172, was born on April 20, 1882, at Louisville, Ky., and attended the Massachusetts Institute of Technology. He entered railway service on April 20, 1903, with the Louisville & Nashville as a rodman in the engineering department. About a year later he went with the Coahuila Coal Company as a mining engineer at Sabinas, Mexico. In the latter part of 1905 he returned to the Louisville & Nashville as a trainmaster's clerk and subsequently served as a clerk in the agent's office, yard master and general yard master. In the latter part of 1912, Mr. Metcalfe was appointed assistant master of trains and on September 1, 1914, was promoted to master of trains. In February, 1918, he entered the United States Army and served as a First Lieutenant with the engineers and in April, 1919, he was appointed assistant superintendent of the Kentucky division of the Louisville & Nashville, which position he was holding at the time of his recent promotion.

Traffic

B. G. Day has been appointed commercial agent for the Illinois Central, with headquarters at St. Louis, Mo.

J. L. Bumpas has been appointed general agent of the Chicago, Indianapolis & Louisville, with headquarters at Dallas, Tex.

J. C. Pridmore has been appointed director of agricultural development of the Arkansas & Louisiana Missouri, with headquarters at Shreveport, La.

W. W. Finley, Jr., has been appointed general southeastern freight agent of the Pennsylvania, with headquarters at Atlanta, Ga., a newly created position.

J. B. Clizbe has been appointed division freight agent of the New York Central with headquarters at Cleveland, Ohio, succeeding **W. H. Smith,** assigned to other duties.

Edwin Stewart, division freight agent for the St. Louis-Southwestern, with headquarters at Pine Bluff, Ark., has been appointed commercial agent, with the same headquarters.

C. E. Rolfe, assistant general freight agent of the Delaware & Hudson, with headquarters at Albany, N. Y., has been appointed assistant general traffic manager, with the same headquarters.

J. N. Crocker, supervisor of mail traffic of the New York Central Lines, with headquarters at New York, has been appointed manager of mail and express traffic, with the same headquarters, the position of supervisor of mail traffic having been abolished.

D. H. Streett, commercial agent for the Illinois Central, with headquarters at New York, has been appointed general eastern agent of the Chicago, Indianapolis & Louisville, with the same headquarters, succeeding P. C. Patterson, whose promotion to general freight agent was reported in the *Railway Age* of January 12.

P. C. Patterson, whose promotion to general freight agent of the Chicago, Indianapolis & Louisville, was reported in the *Railway Age* of January 12, was born on May 5, 1878, at Mobile, Ala. He entered railway service in November, 1893, as a yard clerk on the Louisville & Nashville and was subsequently employed on the Southern Pacific in various capacities in freight offices on the lines in Texas and Louisiana. Mr. Patterson was appointed commercial agent of the Mobile & Ohio at New Orleans, La., in 1908, and was promoted to eastern freight agent, with headquarters at New York, in 1911. During the period of federal control he was engaged in the freight brokerage business, returning to railway service in March, 1920, as foreign freight agent of the Southern, with headquarters at New York. Mr. Patterson was appointed general eastern agent of the Chicago, Indianapolis & Louisville in 1921, and he continued in that position until his recent promotion to general freight agent.

W. C. McCormick, whose promotion to general passenger agent of the Southern Pacific lines in Texas, with headquarters at El Paso, Tex., was reported in the *Railway Age* of December 22, was born on November 13, 1876, at Marlin, Tex. Mr. McCormick entered railway service in 1897 as a messenger of the Southern Pacific, subsequently serving as an apprentice in the shops of the Houston & Texas Central and as a clerk and stenographer in the freight office of the St. Louis - Southwestern at Corsicana, Tex. He was later appointed stenographer and clerk in the office of the assistant general freight agent of the Atchison, Topeka & Santa Fe at Dallas, Tex., and afterward held the same position in the office of the general manager of the Missouri, Kansas & Texas at Parsons, Kans. After a short time out of railway service, he re-entered the service of the Southern Pacific as secretary to the division superintendent of the Houston & Texas Central at Ennis, Tex. He was then transferred to the office of the assistant general freight agent, being promoted successively to chief clerk, soliciting freight agent and traveling freight and passenger agent. He was then promoted to commercial agent at Shreveport, La., and held this position until he was promoted to general agent at Mexico City, Mex. Mr. McCormick was then transferred to El Paso, Tex., and subsequently was promoted to assistant general freight and passenger agent. During federal control he was appointed division freight and passenger agent at El Paso, for the Southern Pacific, the Texas & Pacific, the International & Great Northern and other lines, returning to his position as general freight agent of the Southern Pacific in March, 1920. He continued in this capacity until his recent promotion to general passenger agent.

W. C. McCormick

G. E. White, whose promotion to general freight agent of Chicago, Rock Island & Pacific, with headquarters at Chicago, was reported in the *Railway Age* of January 12, was born in Chicago in 1866, and entered railway service in 1883 as an office boy in the freight department of the Chicago, Rock Island & Pacific. After a short service in this position, he was promoted to clerk in the general freight office at Chicago. In 1895 he was placed in charge of the tariff bureau at Chicago and he continued in this position until 1891, when he was promoted to division freight agent at Chicago. Mr. White was promoted to assistant commercial agent at Chicago in 1903, which position he held until 1911, when he was promoted to assistant general freight agent, with the same headquarters. Mr. White served in this capacity until the time of his recent promotion to general freight agent at Chicago. He succeeded M. A. Patterson, whose death on December 17 was reported in the *Railway Age* of December 22.

Edward M. McClannahan, whose promotion to assistant general freight and passenger agent of the Southern Pacific, with headquarters at El Paso, Tex., was reported in the *Railway Age* of December 22, was born on August 11, 1870, at Williamsport, Md. He entered railway service in July, 1885, as a telegraph operator on the Western Maryland. In December, 1892, he entered the service of the Southern Pacific as a ticket clerk at Beaumont, Tex. Mr. McClannahan was promoted to city passenger and ticket agent at San Antonio, Tex., in September, 1900, and he continued in this position until April, 1917, when he was promoted to division passenger agent, with the same headquarters. He held this position until his recent promotion to assistant general freight and passenger agent, with the exception of the period of government operation when he was in charge of the consolidated ticket offices at San Antonio and Camp Travis.

E. M. McClannahan

Mechanical

M. F. Cox, mechanical engineer of the Louisville & Nashville, with headquarters at Louisville, Ky., has been promoted to assistant superintendent of machinery, with the same headquarters. **J. A. Rabuck** has been appointed mechanical engineer, with headquarters at Louisville, succeeding Mr. Cox.

Fred A. Butler, whose appointment as superintendent of motive power and rolling stock of the Boston & Albany with headquarters at Boston, Mass., was announced in the *Railway Age* of January 5, page 172, was born on September 21, 1868, at Shrewsbury, Mass., and attended the public school. He entered railway service on June 20, 1892, with the Boston & Albany as a locomotive fireman and in 1898 was promoted to engineman and subsequently served in the enginehouse at Beacon Park, Allston, Mass. In May, 1908, he was appointed road foreman of engines and in July, 1910, was appointed master mechanic of the Boston division. On November 1, 1916, Mr. Butler was appointed master mechanic of the Albany division, which position he held at the time of his recent promotion.

B. N. Lewis, assistant mechanical superintendent of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Fond du Lac, Wis., has been promoted to mechanical superintendent, with the same headquarters, a newly created position. **L. Ernest,** master mechanic at Minneapolis, Minn., has been promoted to general master mechanic with headquarters at Shoreham shops, Minneapolis. **J. W. Hendry,** assistant master mechanic of the Winnipeg division, with headquarters at Thief River Falls, Minn., has been promoted to master mechanic of the Winnipeg division, with the same headquarters. **F. M. Roberts,** assistant master mechanic of the Missouri River division, with headquarters at Bismarck, N. Dak., has been promoted to master mechanic of the Missouri River division, with the same headquarters. **H. Halvorson** has been appointed assistant superintendent, car department, Chicago division, with headquarters at Fond du Lac, Wis.

Engineering, Maintenance of Way, and Signaling

H. O. Wagner, acting division engineer of the Plains division of the Atchison, Topeka & Santa Fe, with headquarters at Amarillo, Tex., has been promoted to division engineer of the Plains division.

Lee H. Landis, general manager of the Alaska Railroad, with headquarters at Anchorage, Alaska, has assumed the duties of **F. A. Hansen,** engineer of maintenance and construction, who has been granted leave of absence.

G. M. Wakefield has been appointed assistant division engineer of the Ohio division of the Baltimore & Ohio, with headquarters at Chillicothe, Ohio, succeeding A. M. Davidson, who has resigned his position with the Baltimore & Ohio to accept service with another company.

T. L. Boyle, division engineer of the Grand Rapids division of the Pennsylvania, with headquarters at Fort Wayne, Ind., has been appointed division engineer of the new Grand Rapids division, which includes the old Mackinaw division. **C. D. Bunting,** division engineer of the Mackinaw division, has been appointed assistant division engineer of the Grand Rapids division, with headquarters at Grand Rapids, Michigan.

W. P. Wiltsee, whose appointment as chief engineer of the Norfolk & Western with headquarters at Roanoke, Va., was announced in the *Railway Age* of January 5, page 172, was born on May 30, 1878, at Cincinnati, Ohio, and entered railway service in 1895 as rodman with N. D. Burke, consulting engineer at Cincinnati. He was engaged in municipal and railroad work until 1899, when he entered the employ of the government as a draftsman and instrumentman on river and harbor work. In 1900 he re-entered railway service as assistant engineer of construction and maintenance of the Cincinnati, Portsmouth & Virginia (Norfolk & Western) and in 1901 joined the Norfolk & Western as a draftsman in the office of the engineer maintenance of way and served successively as chief draftsman in the office of the engineer of construction from 1902 to 1903 and as assistant engineer on branch line developments from 1903 to 1912. On the later date he was placed in charge of extensive tidewater improvements at Norfolk and related work. He was employed in this capacity until 1916 when he was appointed assistant engineer in the office of the chief engineer. In 1922 he was appointed principal assistant engineer and a short while thereafter, in 1923, he was appointed acting chief engineer at Roanoke, which position he held at the time of his promotion.

W. P. Wiltsee

Purchasing and Stores

A. Haag, general storekeeper of the Alaska Railroad, with headquarters at Anchorage, Alaska, has resigned and his office has been abolished. **J. H. Hughes** has been appointed superintendent of commissary and stores with supervision over stores, commissary, dining car, and hotel operations. His headquarters will be at Anchorage.

Obituary

Charles C. Young, owner of **Charles C. Young Manufacturing Co.,** Jersey Shore, Pa., died recently.

John Cashman, formerly assistant general counsel of the Missouri Pacific, died in St. Louis, Mo., on January 16.

J. A. Martin, general agent for the Chicago, Burlington & Quincy, with headquarters at New York, died at Connellsville, Pa., on February 18.

P. P. Huston, formerly purchasing agent for the Louisville & Nashville, who retired from active service in 1912, died in Louisville, Ky., on January 18.

W. W. Slater, formerly and for many years signal engineer of the Southern Pacific, who retired from active service in 1914, died in Oakland, Cal., on January 17.

J. W. Titley, superintendent of bridges and building of the Kansas City, Mexico & Orient Railway of Texas, with headquarters at San Angelo, Texas, died in that city on January 14.

Edward G. Riggs, executive assistant of the New York, New Haven & Hartford, with headquarters at New York, died at his home in Brooklyn, N. Y., on January 17. Mr. Riggs was born in New York City on March 24, 1856, and entered the field of journalism when twenty years of age, starting as a financial writer for the New York World. A few years later he went to the New York Sun, where he soon gravitated to political writing, becoming that newspaper's chief political correspondent. He remained with the New York Sun for twenty-nine years, leaving it on February 1, 1913, to become executive assistant for the New Haven, having charge of its publicity. Mr. Riggs counted among his intimate friends men prominent in many walks of life and he was considered one of the outstanding figures in metropolitan journalism.

E. G. Riggs

A. B. Ramsdell, assistant director of personnel of the Chicago, Rock Island & Pacific, with headquarters at Chicago, was killed when struck by a train in that city on January 18. Mr. Ramsdell was born on October 3, 1873, at Tama, Iowa. He entered railway service in July, 1891, as a clerk in the auditing, ticket and passenger department of the Chicago, Rock Island & Pacific. In March, 1893, he was promoted to chief clerk to the superintendent of terminals at Chicago and in February, 1904, he was promoted to trainmaster of the Chicago terminals. He was transferred to the Colorado division in May, 1906, and in December of that year was again transferred to the Iowa division. Mr. Ramsdell was transferred to the Illinois division in January, 1909, and in December of that year he was promoted to superintendent of the Chicago terminals. He was later transferred successively to the St. Louis, the Kansas and the Illinois divisions and in June, 1916, he was promoted to assistant general manager of the first district, with headquarters at Des Moines, Iowa. On April 1, 1919, Mr. Ramsdell was promoted to assistant to the vice-president and general manager and he held this position until June 1, 1922, when he was promoted to assistant vice-president in charge of labor. He was appointed assistant director of personnel in August, 1923, and he continued in this position until his death.

A. B. Ramsdell